# Designing Streets for Kids



Global Designing Cities Initiative

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NACTO

Global Designing Cities Initiative

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The National Association of City Transportation Officials (NACTO) is an association of 81 major North American cities and transit agencies formed to exchange transportation ideas, insights, and practices and cooperatively approach national transportation issues. NACTO's mission is to build cities as places for people, with safe, sustainable, accessible, and equitable transportation choices that support a strong economy and vibrant quality of life. We do this by: communicating a bold vision for 21st century urban mobility and building strong leadership capacity among city transportation officials; empowering a coalition of cities to lead the way on transportation policy at the local, state, and national levels; and raising the state of the practice for street design that prioritizes people walking, biking, and taking transit.

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The Global Designing Cities Initiative (GDCI) is a program of NACTO. Our mission is to inspire a shift toward safe, sustainable, and healthy cities through transforming our streets. We are a team of designers, planners, and urban strategists committed to working in support of city practitioners to get projects on the ground. We focus on empowering local officials and communities to become changemakers, equipping them with the knowledge, tools, and tactics needed to improve urban mobility and fundamentally change the role of streets in our cities.

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# Forewords

## Bernard van Leer Foundation

"This design guide for kids supports cities in the design of streets as a public space of social encounter, equity, and inclusion. It considers the specific needs of babies, toddlers, and caregivers to transform streets into public spaces that create and promote healthy interactions and positive journeys for both children and caregivers. This guide advises on how to design, build, and maintain healthy, alive, welcoming, thriving, green, and play-worthy streets."

Cecilia Vaca Jones
Program Director, Bernard van Leer Foundation

## Bloomberg Philanthropies

*"Designing Streets for Kids* provides a missing voice in the fight for better, safer streets. This guide builds on Bloomberg Philanthropies' efforts to bring road safety projects where they are most needed, not only for children themselves but also for their families and caregivers."

Michael Bloomberg
Founder, Bloomberg Philanthropies
Former Mayor of the City of New York

## FIA Foundation

"Prioritizing the rights and health of children in urban areas is key to tackling air pollution and dangerous roads, and to promoting active, zero carbon mobility. Children deserve safe, healthy journeys. Placing children at the heart of urban street design, this resource supports safer, cleaner, greener, more equitable and livable cities."

Saul Billingsley
Executive Director, FIA Foundation

## Fondation Botnar

"This book not only brings guidance on how to plan and design streets for children and youth, but actively together with them. Taking their views into consideration can add unexpected and refreshing new ideas to the benefit of all of us, children and adults. But moreover, meaningfully including children and youth as key stakeholders increases their confidence and competence, and allows them to actively contribute to society as informed citizens."

Susanna Hausmann-Muela
Chief Program Officer, Fondation Botnar



# A Word from Our Chair

In cities around the world, streets are the front yards for children—and also their primary means of transportation. Kids rely on streets to get to school, to meet friends, to run errands with their parents, and to play and explore their surroundings. But most streets were not built with children in mind. They were designed around automobiles, with wide traffic lanes and little room for human life. Parents and caregivers teach kids that streets are dangerous places to be avoided, and to navigate them only with an adult. With 1.3 million traffic deaths per year—20,000 of them children—traffic crashes remain one of the world's leading causes of death and injury, and force children and vulnerable people to the sidelines of their streets.

After a century of building car infrastructure, there is a revolution among city planners, engineers, urban designers, and residents to reclaim streets for people who are not driving. Streets have been successfully redesigned in hundreds of cities, proving that it is possible to transform them into safe, attractive, and economically vibrant places that put people—especially kids—first. Because safe streets that succeed for children will succeed for people of every age and ability.

*Designing Streets for Kids* leads the effort in child-focused streets, building on NACTO's *Global Street Design Guide* and *Urban Street Design Guide*, and on the real-world designs of pioneering cities. This guide integrates the best of what works in different countries and cultural contexts to create universal principles for streets based on their most vulnerable users.



**Janette Sadik-Khan**
Principal, Bloomberg Associates
Permanent Chair, Global Designing Cities Initiative
Former Commissioner of the New York City Department of Transportation

# About the Guide

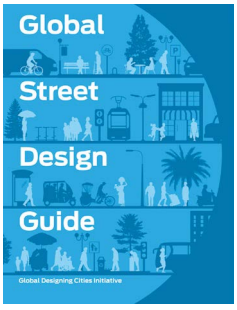
*Designing Streets for Kids* is a supplement to NACTO-GDCI's *Global Street Design Guide* (GSDG), which set a new global baseline for designing urban streets. This guide builds upon the approach of putting people first, with a particular focus on the specific needs of children and their caregivers as pedestrians, cyclists, and transit users in urban streets around the world. This guide will pave the way for cities to implement streets that are safe and healthy, comfortable and convenient, inspirational and educational—streets that better serve everyone.

Ideally, the two guides are used together, as *Designing Streets for Kids* will reference back to some ideas presented in the GSDG. However, this guide may be used on its own.

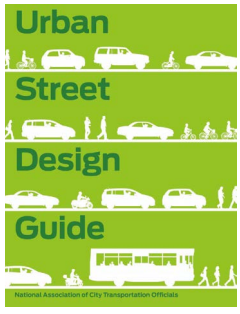
This guide aims to:

- Highlight the importance of designing streets that address the needs of children and their caregivers
- Share tools, strategies, street design examples, and case studies from around the world for readers to adapt to their local contexts
- Provide recommendations and guidance for designing streets
- Inspire leaders, inform practitioners, and engage communities—including children—to know what's possible for their urban streets
- Help readers envision, plan, design, build, program, and maintain streets that prioritize children and their caregivers

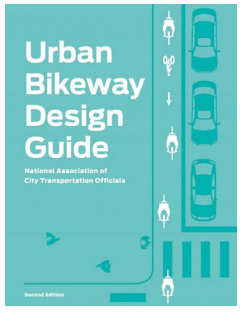
## NACTO design guides referenced



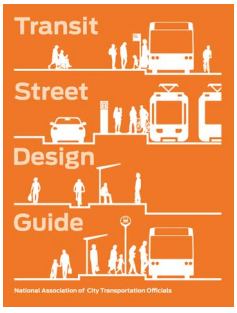

Global Street Design Guide



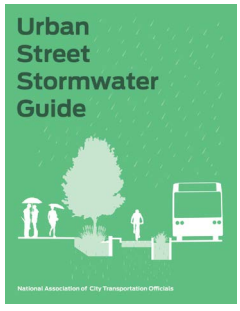

Urban Street Design Guide




Urban Bikeway Design Guide

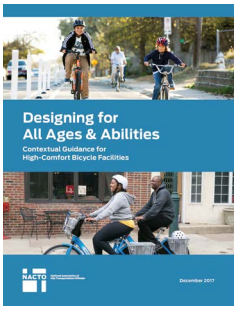



Transit Street Design Guide

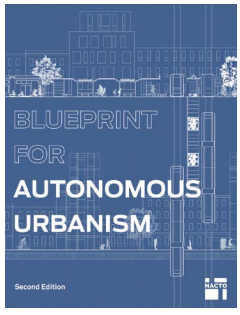



Urban Street Stormwater Guide

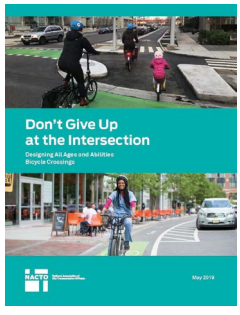
## Other NACTO publications referenced




Designing for All Ages & Abilities




Blueprint for Autonomous Urbanism




Don't Give Up at the Intersection




Bike Share Station Siting Guide




Guidelines for Regulating Shared Micromobility




Managing Mobility Data

# Streets for Kids Around the World







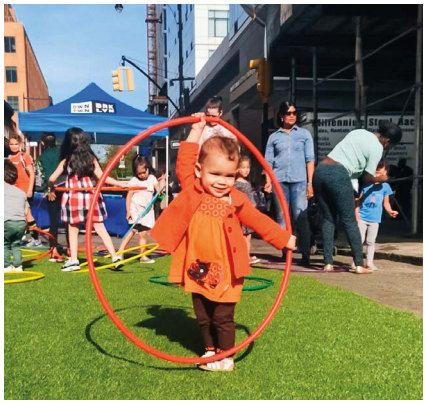














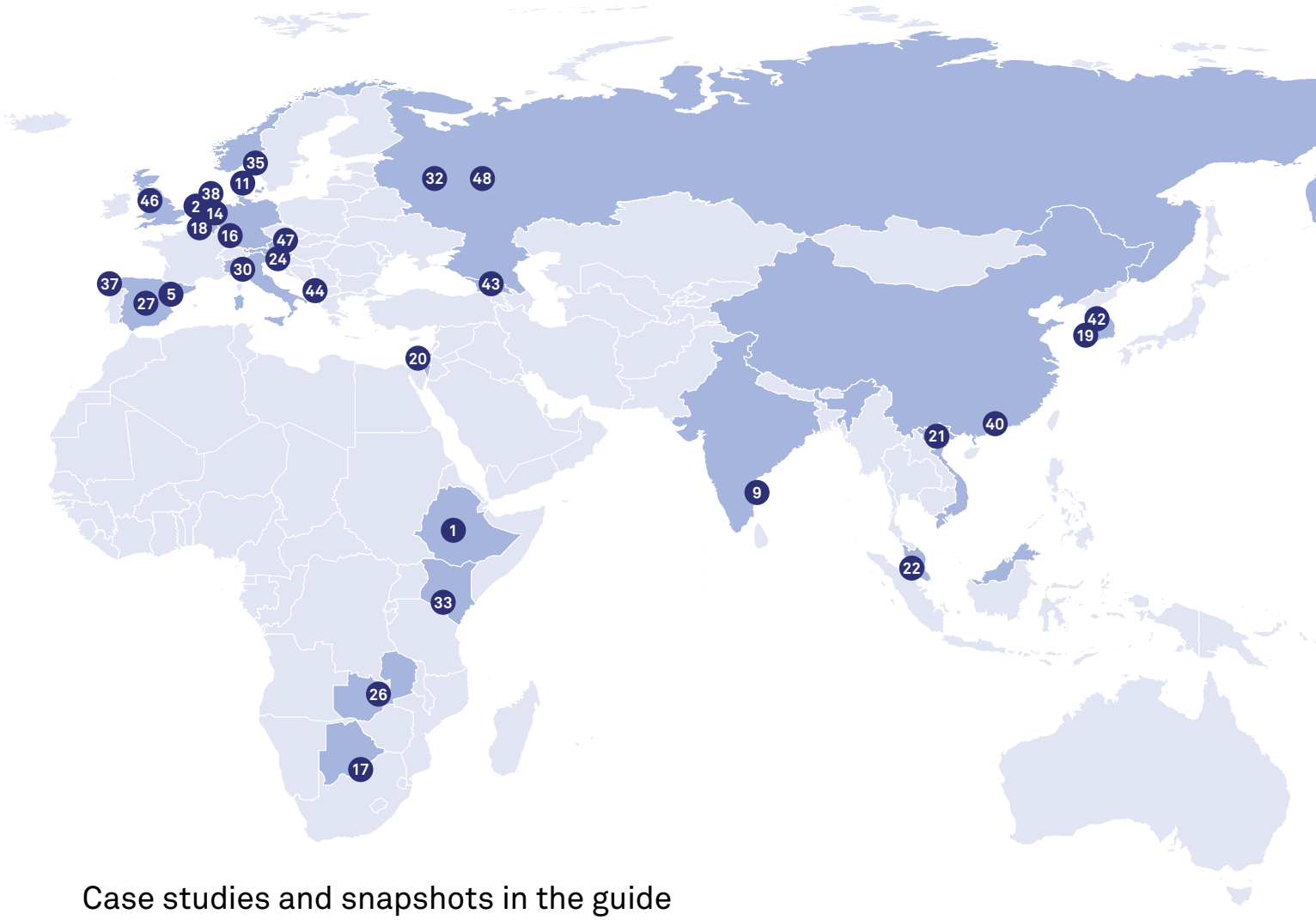




## Streets designed for everyone

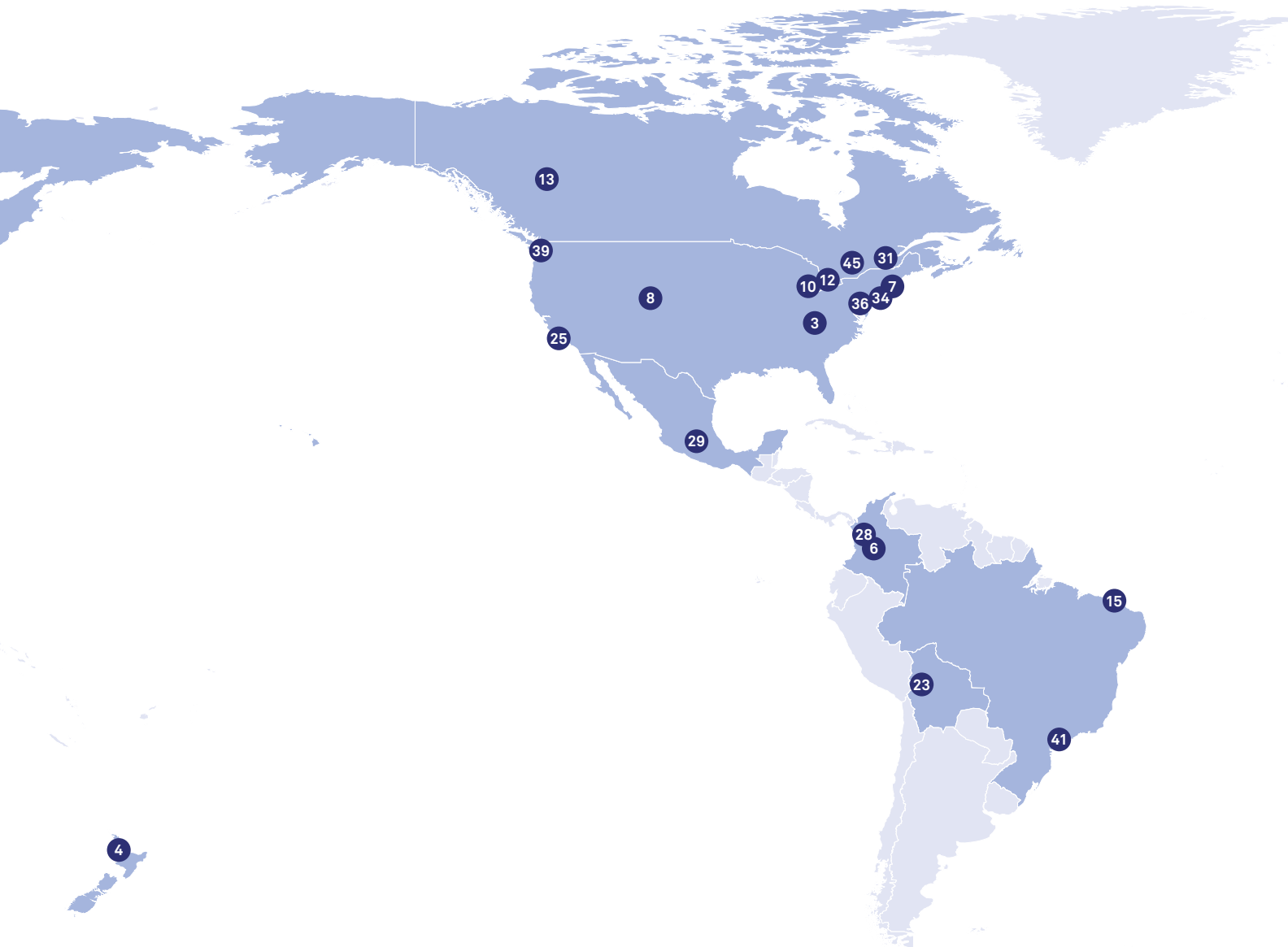
Streets that are designed with the needs of children and caregivers in mind better serve everyone using them, from older adults to people with disabilities to able-bodied people. Globally, urban streets vary widely in context, culture, and aesthetic, but different cities often face similar street design challenges and opportunities. Regardless of these differences, the principles of designing streets, and the need to focus on children, remain the same. From Amsterdam to Accra, from Windhoek to Wellington, cities must put people first when designing or redesigning their streets. Children are best served when they are able to fully use their urban streets, not just parks and playgrounds. Prioritizing children means that streets are safer and more comfortable, beautiful, and enjoyable for all people.

# Global Influences




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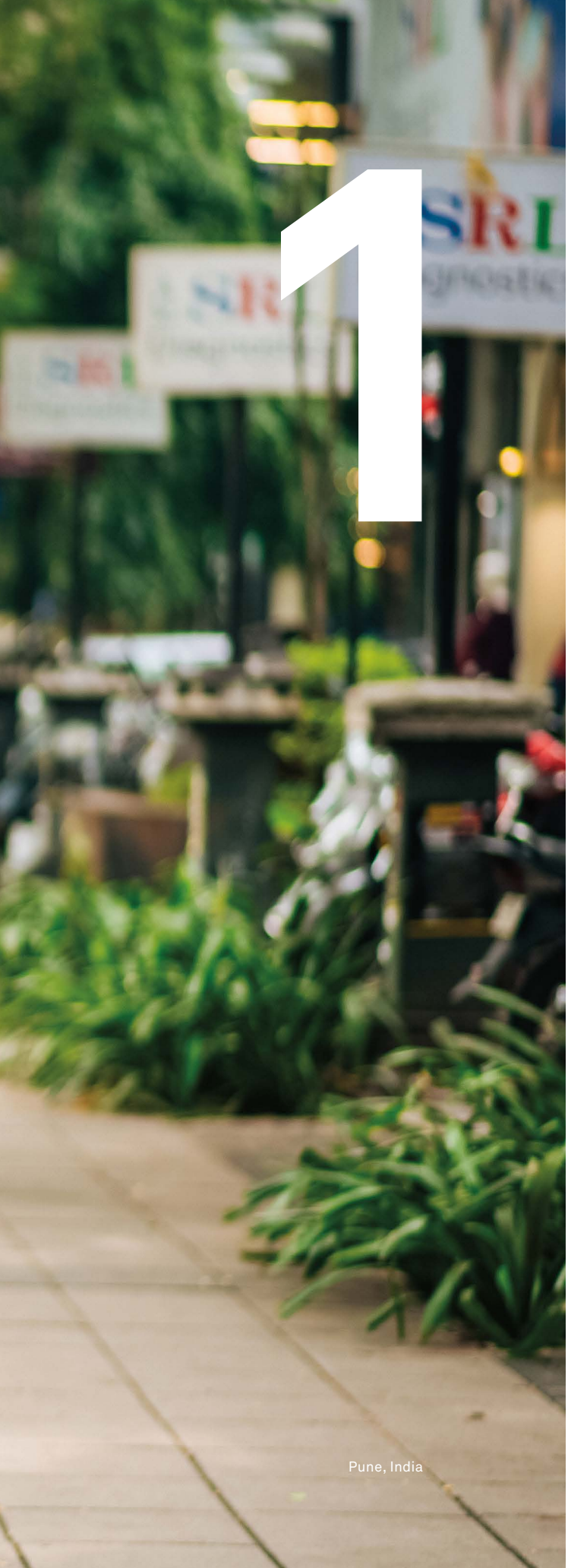



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# 1 Focusing on Kids





Pune, India

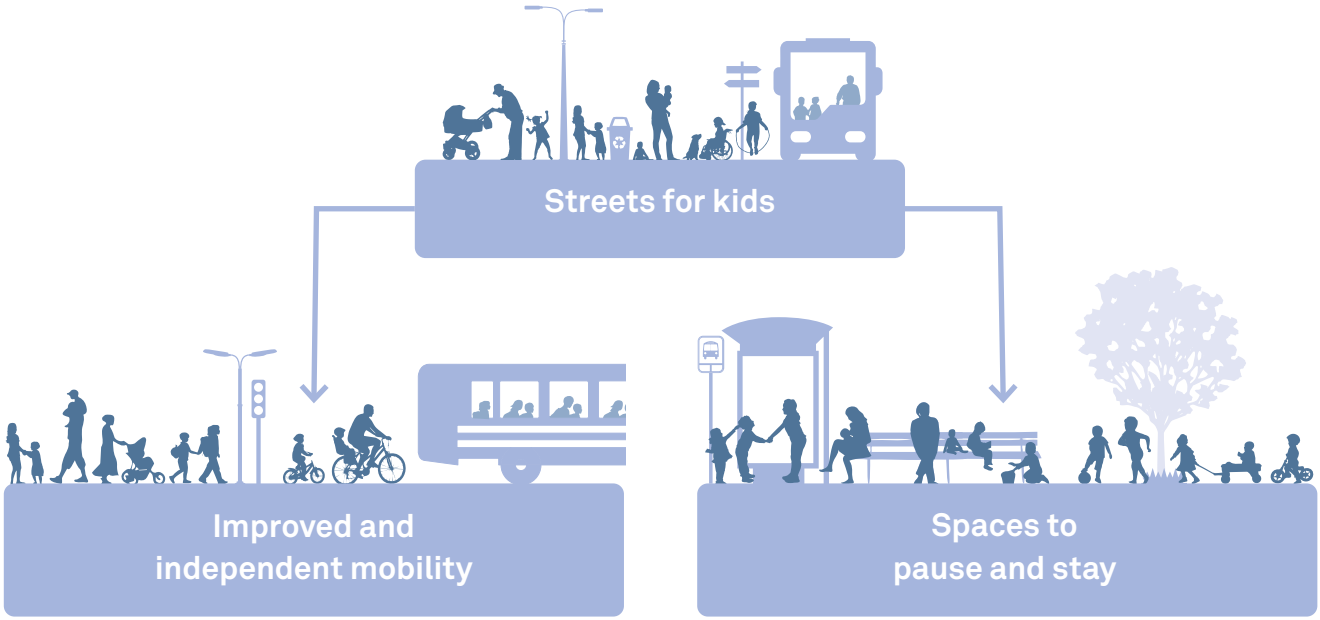
# 1 Focusing on Kids

Streets are a city's largest continuous network of public space and the platform for mobility, allowing (or preventing) access to city resources. Designing, or redesigning, urban streets through the lens of children shows why it is necessary to raise the bar for safety, accessibility, and enjoyment. Children's surroundings can have long-term effects on their health, physical and cognitive development, and social well-being. When city leaders invest in street design that is good for children, they create streets that better serve all people.

This section discusses children's needs from urban streets, the challenges children currently face, and how specific design actions for children can have broad benefits for all street users.

# 1.1 | Fundamentals of Child-Friendly Streets

When designing streets for children, improved and independent mobility as well as quality public space should be the fundamental goals and outcomes. Ensure that a city's physical infrastructure, policies, programs, and overall priorities align with core principles to shape streets that are safe and healthy, comfortable and convenient, and inspirational and educational.




Children, caregivers, and others should have efficient and sustainable choices to move around their cities more reliably and predictably, with less waiting time.

Children and young adults benefit from independent mobility, with autonomy to walk, cycle, and take transit, and they should feel safe using streets. Caregivers should be able to be independent when moving with young children.

Acknowledging streets as public spaces can ensure they are not only places to move through, but spaces to pause and spend time. For children and caregivers, streets can provide opportunities for outdoor play, inspiration, personal development, and interpersonal connections.

# Streets for kids should be




## SAFE AND HEALTHY

Streets and mobility options should ensure safe infrastructure and equitable access to key city services. Streets must be designed to remove or minimize risk to life-threatening conditions, and promote physical and mental well-being for kids and their caregivers.

Safe and healthy streets include continuous and accessible pedestrian infrastructure, safe cycling and transit facilities, safe vehicular speeds, clean air, access to nature through landscape and trees, opportunities for physical activity, and adequate lighting.



## COMFORTABLE AND CONVENIENT

Street designs that pay attention to details beyond basic needs can encourage kids and caregivers to spend more time using streets, inviting additional trips and making existing journeys more enjoyable. Streets that support reliable transit options and travel times allow families to plan their daily routines more predictably.

Comfortable and convenient streets include places to sit for moments of rest or interpersonal connection, reliable transit options with legible wayfinding and schedules, shade and shelter suitable for the local climate along sidewalks and at transit stops, and facilities like restrooms and drinking fountains.



## INSPIRATIONAL AND EDUCATIONAL

While it is important to survive, children and caregivers should be able to thrive. Great streets for kids and caregivers are interesting, joyful, and educational. These streets are not just for transiting between places, but are themselves a destination. It is critical for children's environments to foster learning and inspiration. Children are greatly influenced by their environments, especially in their formative years.

Inspiring and educational streets are beautiful; have spaces for learning, development, and play (through images, colors, textures, and games); and offer opportunities for imaginations to develop.

# 1.2 | Children and Caregivers as Street Users

**Designing streets for kids must take into account children and everyone who has or interacts with a child, including pregnant people and older adults who take care of children. Children's needs vary based on their ages and their local context, but are also universal.**

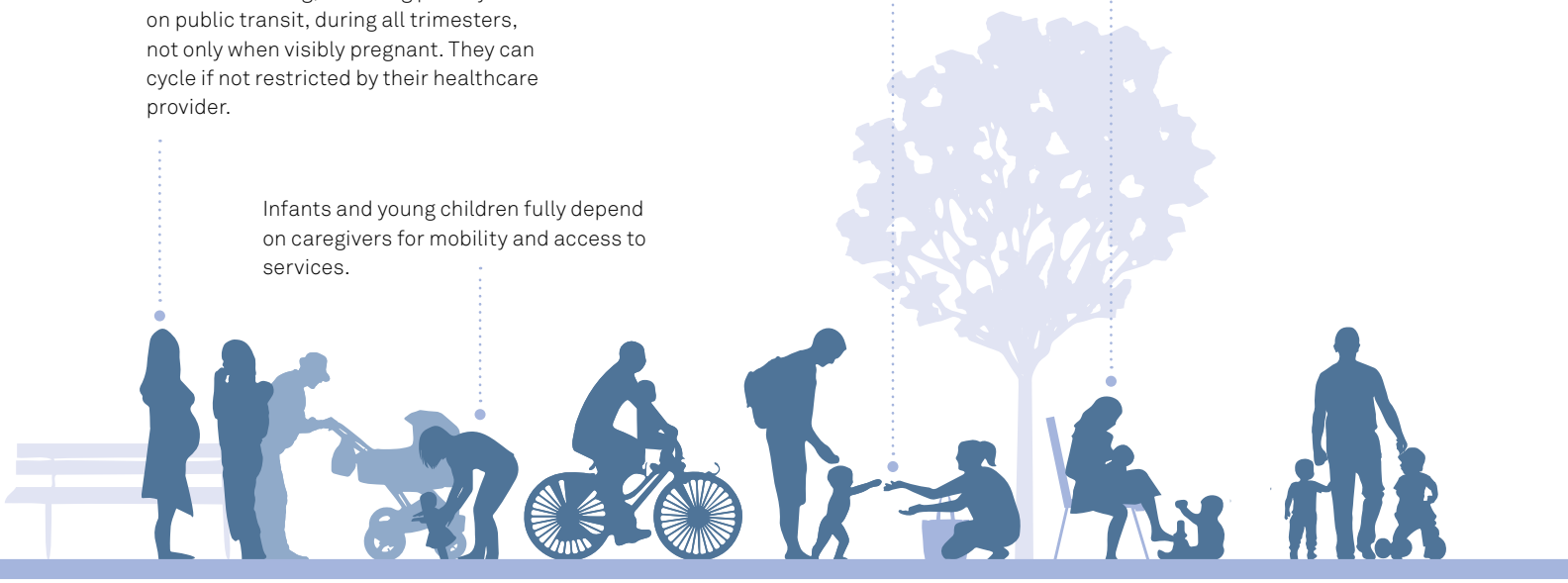
All children—all people—need food, shelter, play, joy, and healthy relationships with others. Streets can offer opportunities to address these needs. Although needs may differ, what is good for one group of people often helps another group. Streets that are good for kids are good for everyone.

The relationship between a caregiver and child is important to the child's social and emotional development. The built environment should support both caregivers and the act of caregiving by providing space, privacy, and opportunities to socialize for both children and their caregivers.

A significant amount of brain architecture is shaped in the first three years of life, and this is when children grow and learn the fastest.[1] An environment rich with stimulation such as colors, patterns, and textures is a foundation for a child's cognitive skills.[2]

Pregnant people may walk at lower speeds and need seating, including priority seats on public transit, during all trimesters, not only when visibly pregnant. They can cycle if not restricted by their healthcare provider.

Infants and young children fully depend on caregivers for mobility and access to services.



Infants younger than six months are usually carried or pushed in a stroller or other wheeled device, and often take naps on the go, so accessible infrastructure is critical. From six months to one year, infants often want to look at their caregiver or out at the world, and often crawl.

Front-mounted seats on bicycles are best suited for children nine months to three years of age.

Caregivers often carry many supplies for an infant or a young child, and need accessible conditions to walk, roll, and take transit. Changes in level, gaps in surfaces on streets, and restricted space inside transit can significantly reduce their mobility.

Toddlers (one- to three-year-olds) can walk with caregivers and be carried on bicycles, and some can scoot or balance on their own bicycles next to caregivers.

As children grow, they gain more independence and freedom, first by walking or cycling to school with caregivers. But they may also move around their cities without adults, on foot, by cycle, or using transit. They may be alone or in groups. Many five- to eight-year-old children can cross streets and cycle in spaces shared with very low-speed or infrequent motor vehicle traffic.

Adolescents are often on their own or in groups with people of similar ages instead of with caregivers. They may rely heavily on safe pedestrian networks, cycling infrastructure, and public transit to get to school and around the places where they live. Streets can provide social spaces for adolescents, who are often viewed as a nuisance and excluded from playgrounds, school yards, and other public spaces.



Many three- to five-year-olds are accompanied by caregivers, can scoot or cycle on their own, and can often run as fast as a jogging adult. They can often play safely on sidewalks with minimal supervision, and can learn to safely cross some types of streets alongside caregivers. They may insist on independent movement, but often tire quickly. Transit is a popular mode for this age because their range of walking mobility is usually less than that of an adult.

Globally, caregivers are predominantly women. However, transportation systems are rarely tailored to the needs of caregivers and children, which may limit or deny access to city services.

From about age 8 to 13, children may begin expanding independent mobility and building life skills through activities like cycling to school or taking transit by themselves. They can walk or cycle longer distances. With their improved visual judgment, kids can use cycle lanes in conditions similar to a beginning adult rider and can cross larger streets on their own. They may also begin to act as caregivers to younger siblings or other children.

# 1.3 | **Early Childhood Development**

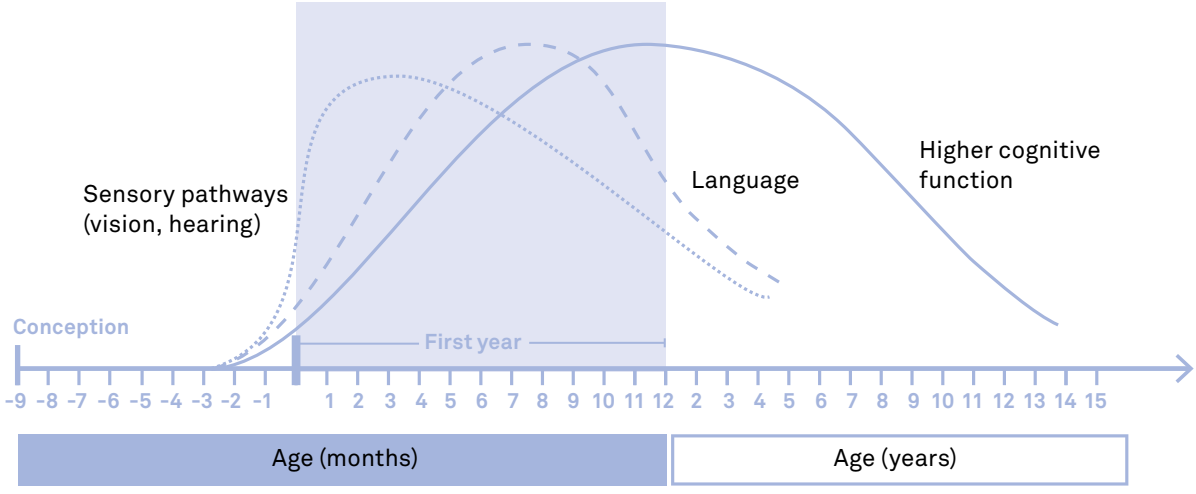
Supporting healthy brain development in a child's earliest years sets a strong foundation for later in life, providing the building blocks for educational achievement, economic productivity, responsible citizenship, lifelong health, strong communities, and successful parenting of future generations.[3]

By creating an environment that is safe, joyful, beautiful, and encourages connections between people, street design can support healthy development for babies, paving the way for them to become healthy kids, healthy teenagers, and healthy adults.

## Human brain development

An infant's brain creates more than one million new neural connections every second. Early experiences in life, particularly from birth to age three, influence which connections are reinforced, laying a strong foundation for higher-level brain functions later in life, and which connections are pruned away, leaving a child vulnerable to falling behind.[4]

These reinforced and pruned connections form the basis of brain architecture, developing important functions such as hearing, language, and cognitive abilities. The brain develops in interaction with its environment and the input it receives.




The timing of brain development is genetic, but early experiences determine whether the circuits are strong or weak. Neural connections for different functions develop sequentially: first, sensory pathways that support basic vision and hearing develop, followed by early language skills and higher cognitive functions.

More complex brain circuits build upon early simpler circuits. Supporting healthy brain development in the earliest years sets a strong foundation for later in life.
*(Adapted from Center on the Developing Child, Harvard University.)*

## Shaping streets for healthy brain development

The environment where infants and young children spend time can greatly influence their daily experiences and contribute to the overall health and well-being of both children and their caregivers. Alongside housing, healthcare facilities, daycare, schools, parks, and playgrounds, streets offer a critical spatial opportunity to provide safe, healthy, and stimulating environments that can support healthy brain development.



## Streets for healthy children



### REDUCE SOURCES OF STRESS

While some levels of stress are an important part of a baby's development, extreme stress can weaken the architecture of the developing brain and affect the stress levels and mental well-being of caregivers. Well-designed streets can minimize additional risks of road traffic fatalities and injuries, reduce exposure to extreme noise and air pollution, and generally support mental health and well-being.



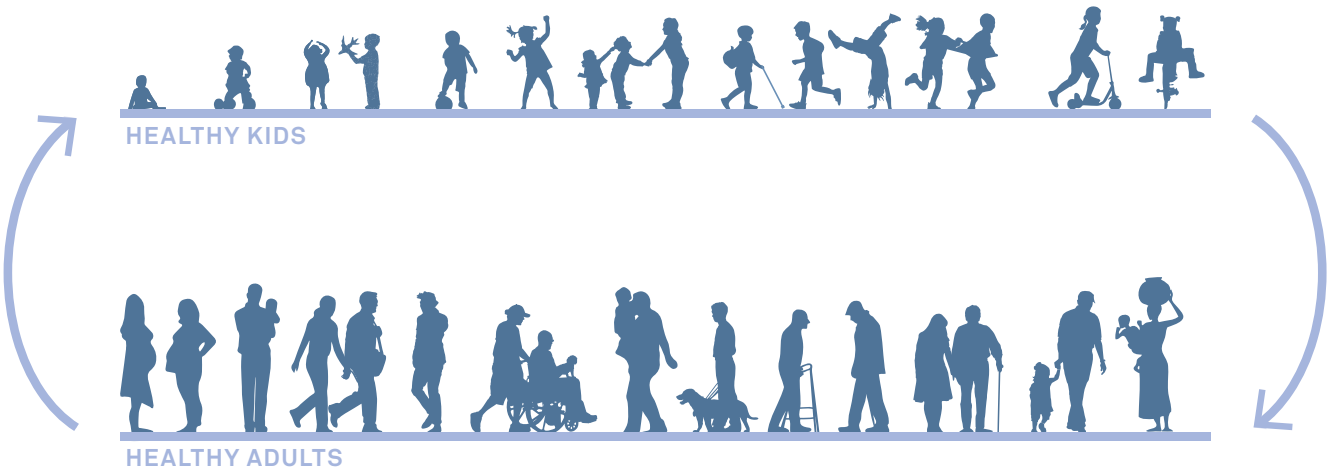
### SUPPORT RESPONSIVE RELATIONSHIPS

Babies and caregivers interact with each other through facial expressions, gestures, talking, making sounds, and smiling. These "serve-and-return" interactions are essential to reinforcing the wiring of the brain in the earliest years. By providing inviting and high-quality public spaces, urban streets can foster these critical interactions and support relationship-building between infants and their caregivers.



### STRENGTHEN CORE LIFE SKILLS

Brain circuits and connections are reinforced through repeated use, and an infant's environment dictates which of these circuits and connections grow stronger.[5] Well-designed streets can encourage young children to learn and play, which helps build skills and cognitive functions during their everyday journeys.

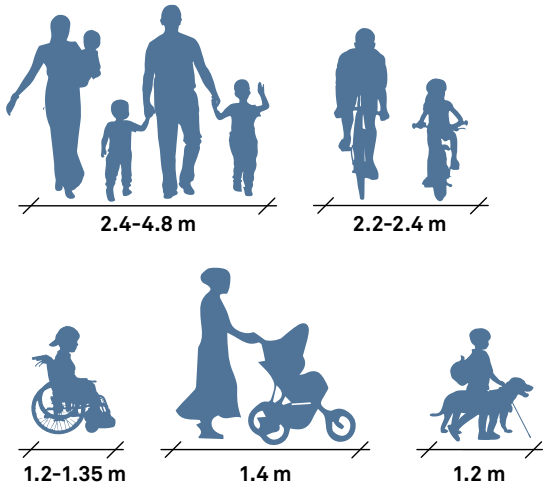


# 1.4 | **Children's Needs from Streets**



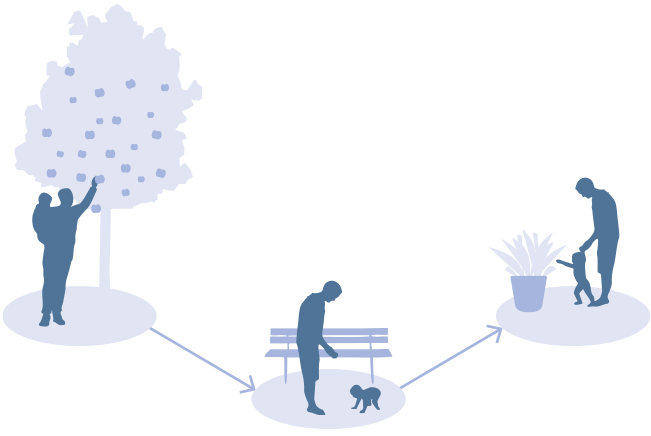
## RELIABLE MOBILITY CHOICES

Providing safe, reliable, and integrated mobility options means improving access to key destinations and critical services that kids, caregivers, and families need on a daily basis, including trips that happen at off-peak times and to multiple destinations. The ability to navigate the local environment is critical to children maturing, developing, and gaining confidence and a sense of personal agency. Independent mobility is important for all children, including those with disabilities, to prepare them for independent life as adults.




## SPACE

Young children are accompanied by caregivers. They may be in strollers or carried by their caregivers, or may walk holding hands or cycle side by side, which allows communication and connection between children and caregivers. Children's spontaneous play also requires more space. Caregivers may restrict safe roaming distances or playing, running, or jumping on narrow sidewalks, while wider sidewalks and car-free areas allow children more freedom to play and develop independence.



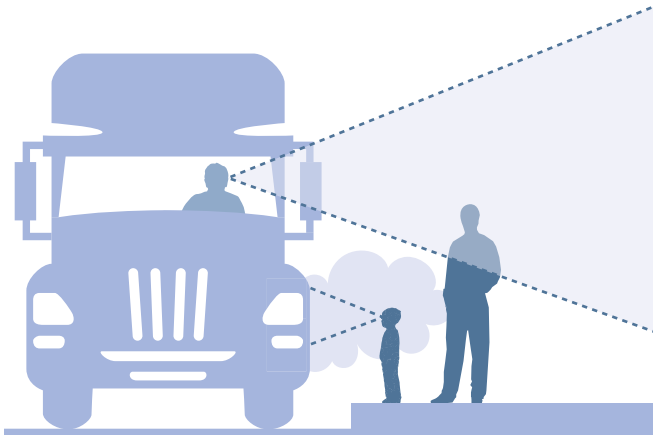
## PLACES TO PAUSE AND STAY

Compared to adults, young children often walk more slowly and tire more easily. They and their caregivers need places along the way to rest, eat, and regroup. A caregiver carrying a child or with a child in a stroller may walk at a different pace. Places to pause and stay provide children and caregivers, as well as older adults, with appropriate space to rest while using urban streets. These spaces can invite social interactions and encourage families to use streets for longer periods of time.



## SOCIAL INTERACTION

Connections between nerve cells in the brain are formed every time a child interacts with their environment or other people. The brain is at its most flexible in the first five years of life, making this a critical period for learning and growth. Well-designed streets encourage these everyday experiences to invite more meaningful interactions and social connections among children, caregivers, and their environments.[6]



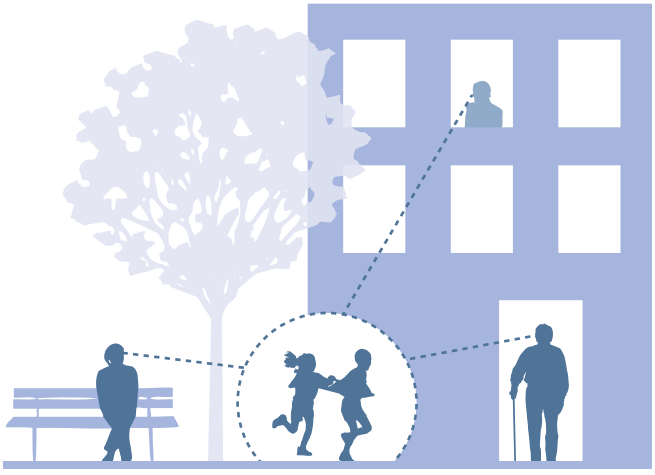
## VISIBILITY

An average three-year-old child is 95 cm tall, so what they see and experience is different than an adult. They are closer than adults to vehicle exhaust, building utilities, trash cans, paving, and other details, experiencing these more intimately due to their heights. Children are less visible to people driving cars and trucks, the designs of which often neglect to account for the heights of children and other users.



## PLAY AND LEARNING

Play is essential to children's development because it increases physical activity, develops motor skills, and encourages socializing and creativity. Streets provide opportunities to bring learning and play into children's everyday lives, whether walking along a sidewalk or waiting at a transit stop. Unstructured play comes from purposeful interactions with children's everyday environments and builds imagination, cognitive development, and resilience by allowing children to take the lead and make decisions.[7]



## SECURITY

The perceptions, attitudes, and beliefs of caregivers have significant impact on outcomes for children. If caregivers feel unsafe while using streets, they are less likely to let children move independently or to venture out with them. Cleanliness, safe vehicle speeds, street design, and the safety provided by an active but not overly crowded sidewalk or public space are important factors that influence a caregiver's perception of safety.



## A SAFE ENVIRONMENT

Compared to those of adults, children's bodies and brains are less developed and more vulnerable to the environment in which they live. To support their health and development, children need an environment in which unhealthy risks from the street, such as traffic violence, polluted air, and excessive noise, are minimized while opportunities for learning and healthy connections are supported.

## 1.5 | **Global Health Crisis**

The core challenges facing children in cities are caused, or exacerbated, by their surroundings. Road traffic crashes, ambient air pollution, poor mental health, lack of physical activity, and more are heightened by street design challenges that have consistently prioritized motor vehicles over people and sustainable modes of transit. These challenges affect all children, but are particularly stark for children from lower-income areas.[8]

Globally, **500 children die each day** from road traffic crashes.[9]

These injuries are the **leading cause of death** for people ages 5 to 29.[10]



**ROAD TRAFFIC CRASHES**

Studies have demonstrated a clear relationship between vehicular speeds and pedestrian fatalities, showing that speeds over 30 km/h should not be allowed on urban streets.[11] Children, who have smaller and more fragile bodies, are at a higher risk of fatalities from road traffic crashes at all speeds.

Around **127,000 children under age five die each year** from outdoor air pollution worldwide.[12]



**AMBIENT AIR POLLUTION**

Ambient air pollution has significant health consequences for all urban residents and particularly affects young children and unborn fetuses, who are more sensitive to their local environments. Infants inhale three to five times more air by body weight than adults, and unborn children can be affected by air pollution in the womb.[13] Road traffic and design of vehicles contributes to sometimes dangerously high levels of air pollution.

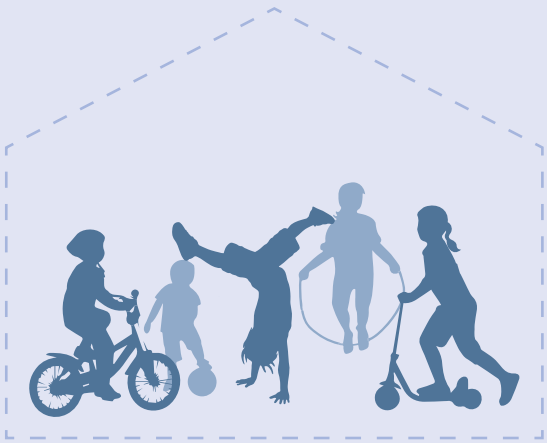
For children, exposure to noise pollution can lead to **inability to concentrate, increased stress levels,** and **reduced cognitive function.**[14]



### MENTAL HEALTH STRESSES

Elevated levels of noise and light pollution can cause increased stress levels, disrupted sleep, and poorer cognitive development. Poor street design discourages people from using streets, thus increasing social isolation and reducing opportunities for children and caregivers to build social bonds, which act as buffers against mental health stresses.

**81% of adolescents** (age 11 to 17) worldwide **are insufficiently physically active.**[15]



### LACK OF PHYSICAL ACTIVITY

Streets that are hostile to pedestrians, cyclists, and transit users and lack reliable or safe mobility options may encourage caregivers to drive children to school and other activities, encourage sedentary lifestyles, and deprive children of independent mobility and opportunities to play. The number of children and adolescents who are obese has increased tenfold since the 1970s.[16]

# 1.6 | **Identifying Challenges**

Streets with sources of risk and unhealthy stress threaten children and caregivers with dangerous conditions and reduce everyday opportunities for learning and building healthy relationships.

Consider how the risk factors identified here may contribute to specific challenges in a neighborhood or city, and how improved street design can address these factors.




### FAST-MOVING TRAFFIC

Traffic moving at high speeds, often caused by street designs that prioritize cars and allow for these speeds, greatly increases the risk and severity of collisions.

### LACK OF INFRASTRUCTURE

The absence of safe places to walk or cycle forces children into unsafe places on urban streets.

### NOISE POLLUTION

Noises in urban areas, including honking, idling, or speeding vehicles, increase mental health stresses. Streets with higher vehicle volumes and faster speeds tend to be louder.[17]

### LACK OF EXPOSURE TO NATURE

Streets with no or very few trees and green spaces not only lack shading, but also opportunities to interact with nature. Exposure to nature is proven to increase physical and emotional well-being.

### POOR VISIBILITY

Missing or low-quality markings, blind spots due to poor street design, and a lack of adequate lighting contribute to poor visibility of pedestrians and cyclists by motorists, increasing the risk of collisions.

### VEHICLE DESIGN

Vehicle emissions affect respiratory health. Pedestrians hit by larger cars, like SUVs, are significantly more likely to be killed or severely injured.[18] Due to vehicle height, it is more difficult for motorists to see pedestrians, especially children.

### POOR WATER MANAGEMENT

Issues with water management or flooding can be caused by poor infrastructure and excess impervious surfaces. Areas of still water can lead to water-borne diseases for people living nearby, and mismanaged water can impede mobility for pedestrians and cyclists.

### LACK OF MAINTENANCE

A lack of general street cleaning and waste collection may cause issues for children, who are closer to the ground and more likely to touch things they encounter.

### PERSONAL SAFETY ISSUES

Unsafe conditions, or perceived lack of safety, for children and caregivers can be exacerbated by deserted, unclean, and unmaintained places.

### URBAN HEAT ISLAND

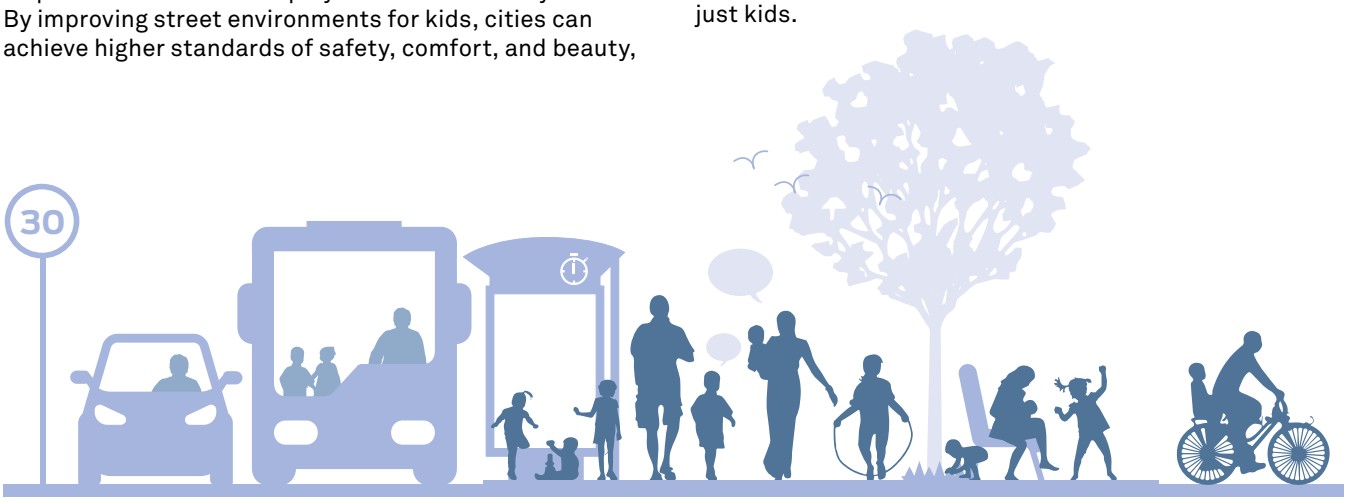
Large areas of asphalt and other impervious surfaces in urban areas contribute to higher temperatures, called the urban heat island effect. This is exacerbated where shade is lacking. This extreme discomfort particularly affects children and older adults.

### LACK OF MOBILITY OPTIONS

The absence of safe mobility options often leads to dependence on private vehicles, which, in turn, leads to sedentary lifestyles. Access to public transit, cycle facilities, and low-cost recreation facilities has been found to be closely associated with physical activity.

# 1.7 | **Thriving in Cities**

Just as poor street design can harm children, good street design can protect them, improve their health, and inspire them to learn and play in their formative years. By improving street environments for kids, cities can achieve higher standards of safety, comfort, and beauty, making streets better for people of all ages and abilities. Designing streets with kids in mind has widespread benefits that positively affect all urban residents—not just kids.




## SAVING LIVES

Improved street design will lead to fewer fatalities and injuries from motor vehicle crashes among all people, not just children. Road traffic injuries have a high financial and social cost in society. The burden is disproportionately borne by pedestrians, cyclists, and motorcyclists, in particular those in developing countries.

## EFFECTIVE MOBILITY

Children and caregivers have different mobility needs and may make more off-peak trips that are linked together. Infrastructure and mobility options that accommodate needs for multiple stops and modes in a single journey can have wide-reaching impacts. Prioritizing sustainable alternatives to using private motor vehicles—such as frequent, efficient, and reliable transit, cycle share, safe cycling facilities, and an accessible walking network—will improve access to the city, creating a more equitable and desirable city for everyone.

## PHYSICAL AND MENTAL HEALTH

Every year, people die unnecessarily or suffer from chronic diseases related to poor air quality and lack of physical activity. Urban streets can encourage better physical and mental health by providing sustainable and active transportation options, creating inviting public spaces, and incorporating nature.[19] When designed well, streets can markedly improve long-term health outcomes, reduce asthma attacks and lung-related diseases, reduce stress, and improve physical and mental well-being.

## ECONOMIC OPPORTUNITIES

Streets that prioritize sustainable transportation move more people in the same amount of space, so infrastructure serves more people. Trips can take less time, giving caregivers more time with their kids and more time to access jobs. Cities that invest in infrastructure, like streets that are safe for pedestrians and cyclists, save money on long-term healthcare costs for citizens: physical activity in childhood leads to improved adult health.[20] Finally, streets that are safe, beautiful, and inspiring invite children and caregivers to move to and spend more time in cities, including in commercial areas.

## SOCIAL CONNECTIONS

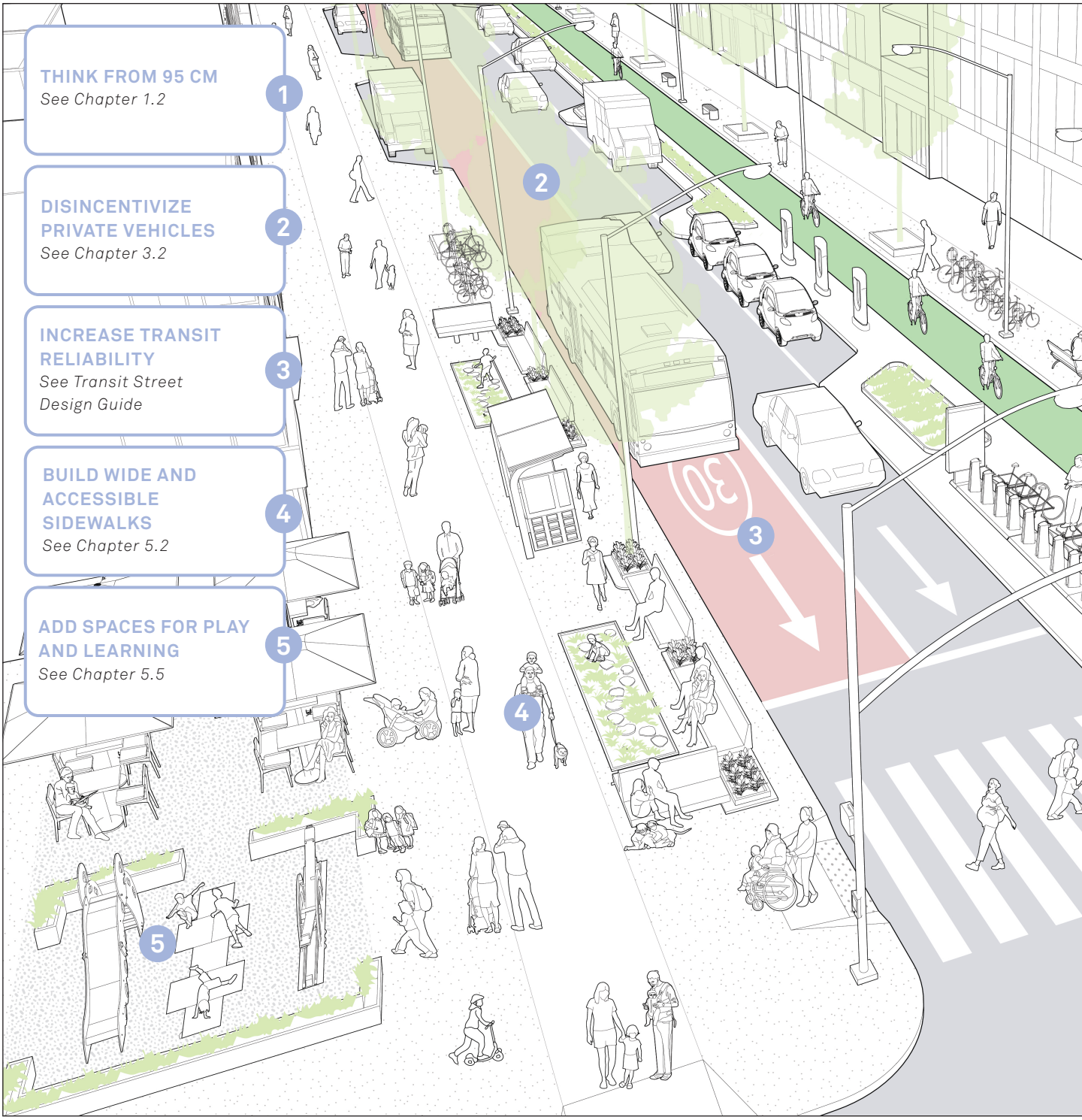
A city's livability is highly dependent on how its streets make its population feel connected to the important places and people in their lives. Streets can encourage social interactions, build stronger and safer communities, and improve social equity. Well-designed streets—streets that are safe, comfortable, and inspirational—improve quality of life for users of all ages and abilities. Streets that move people efficiently and that are beautiful, clean, and thoughtful show people that they matter and are cared for by their city.

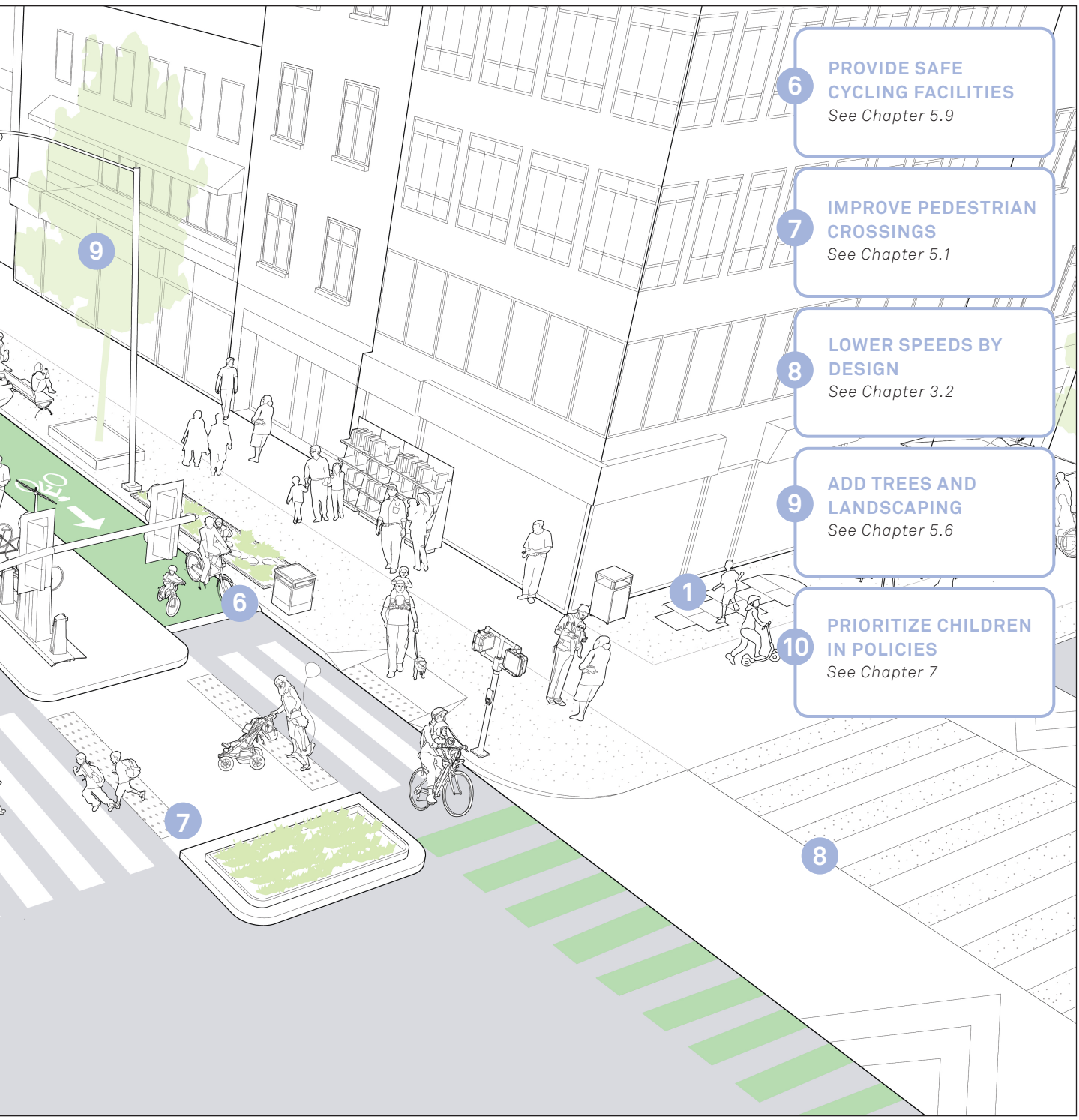
## ENVIRONMENTAL RESILIENCE

Creating better spaces on the street for transit, cyclists, and pedestrians catalyzes mode shift, which is important for reducing transportation-related emissions. Furthermore, choosing efficient modes of transportation can help unlock space on the street that can be used for adding landscaping, trees, and stormwater systems and improving biodiversity. A focus on children and caregivers in cities includes creating opportunities for children to interact with nature and natural elements.

# 1.8 | **Ten Actions to Improve Streets for Children**

The challenges faced by kids, caregivers, and many others on urban streets are ideally addressed through a holistic combination of design and policy. However, some specific actions can help both while beginning to address these challenges and throughout the ongoing process of improving and redesigning urban streets. Below are some important actions.




6
PROVIDE SAFE CYCLING FACILITIES
See Chapter 5.9
7
IMPROVE PEDESTRIAN CROSSINGS
See Chapter 5.1
8
LOWER SPEEDS BY DESIGN
See Chapter 3.2
9
ADD TREES AND LANDSCAPING
See Chapter 5.6
10
PRIORITIZE CHILDREN IN POLICIES
See Chapter 7
1
6
7
8
9

# B



2 Designing at Multiple Scales
3 Street Design Strategies
4 Transforming Streets
5 Street Design Elements

10
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9
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Fortaleza, Brazil

# 2

# Designing at Multiple Scales

Successful streets address the different scales of design that shape the built environment, from policy and planning at the city scale down to the detail level of seating and curb heights. Cities have powerful tools to reshape the way their street networks operate and which streets serve which purposes. Not all solutions that help create great streets for children and caregivers will be limited to physical design. Streets that successfully serve children are the sum of geometric design, operational changes, and network planning, and are supported by strong planning policies, goal-oriented programs, and design guidance.

# 2.1 | **Working Across Scales**

Planning and implementing streets requires considering multiple design scales and permeating different disciplines. From city scale to human scale, there are multiple ways in which planners, designers, engineers, and other professionals can intervene in the built environment to create or redesign better streets for children and caregivers. Successful design at one scale is supported by aligned efforts across other scales.



## 2.2 | CITY AND REGIONAL PLANNING

Designing streets for kids at the scale of a city or region means ensuring that transportation planning is coordinated with land use and zoning. It is important to identify where children live, what services they need, and where and how they access these services, and to use this information to plan for equitable access to mobility options and services.

This scale of design is often approached by city or regional government agencies through planning, policy, and programs. Government agencies, private investors, and local organizations must align their efforts to prioritize children. It is critical to set a strong citywide vision that prioritizes the needs of children and to embed this vision in all planning policies, mode-share goals, transit investments, budget allocations, and design decisions.

Comprehensive plans for transit, cycling, and walking networks should be developed at a citywide scale and implemented at a neighborhood scale in response to local conditions. Streets can comprise up to 80% of a city's total area of public space, and decisions made at this largest scale have broad impacts on the overall health and quality of life for children and families for generations to come.[1] *For more information, see Section C.*



## 2.3 | NEIGHBORHOOD SCALE

Street design at the neighborhood scale focuses on how easily kids and caregivers can access key destinations and services, such as schools, daycare, playgrounds, parks, healthcare facilities, and healthy food options, on a daily basis. It also involves identifying opportunities within street networks for creating new, quality public spaces and experiences close to their homes.

Streets are the conduits that knit communities together and should be redesigned to respond to the needs and contexts of local communities. Each neighborhood has various street typologies that vary in size, serve different needs, and may have different priorities. Within this diverse set of streets, it is important to develop designs that ensure walking, cycling, and transit facilities are prioritized over direct paths for private vehicles. Identify areas or streets that can be closed to private vehicles or where vehicular access can be limited, and open them to people. This will help improve road safety, reduce exposure to air and noise pollution, and provide new neighborhood destinations.



## 2.4 | BLOCK SCALE

Designing streets at the block scale allows more nuanced considerations of the local context to inform design decisions. The same street may adjust design along multiple blocks within a city or neighborhood depending on the density and uses of adjacent buildings; volumes of people walking, cycling, or taking transit; loading needs for local businesses; water management challenges; or public space needs within the neighborhood. The dimensions of the right-of-way (the entire space between property lines) inform how space can be allocated between different transportation modes and other functions or activities on the street.

Key destinations and local businesses, such as schools, daycare, healthcare facilities, shopping areas, restaurants, and parks, inform the design and operational decisions of the specific block where they are located. Decisions may include where to add safe pedestrian crossings, how to manage the curb in different ways at different times of day, where to create shared or pedestrian-only streets, and how to prioritize transit and cycling where space is limited.

Carefully consider local conditions to ensure block-level design responds accordingly. *For more information, see Chapters 3 and 4.*



## 2.5 | DETAIL SCALE

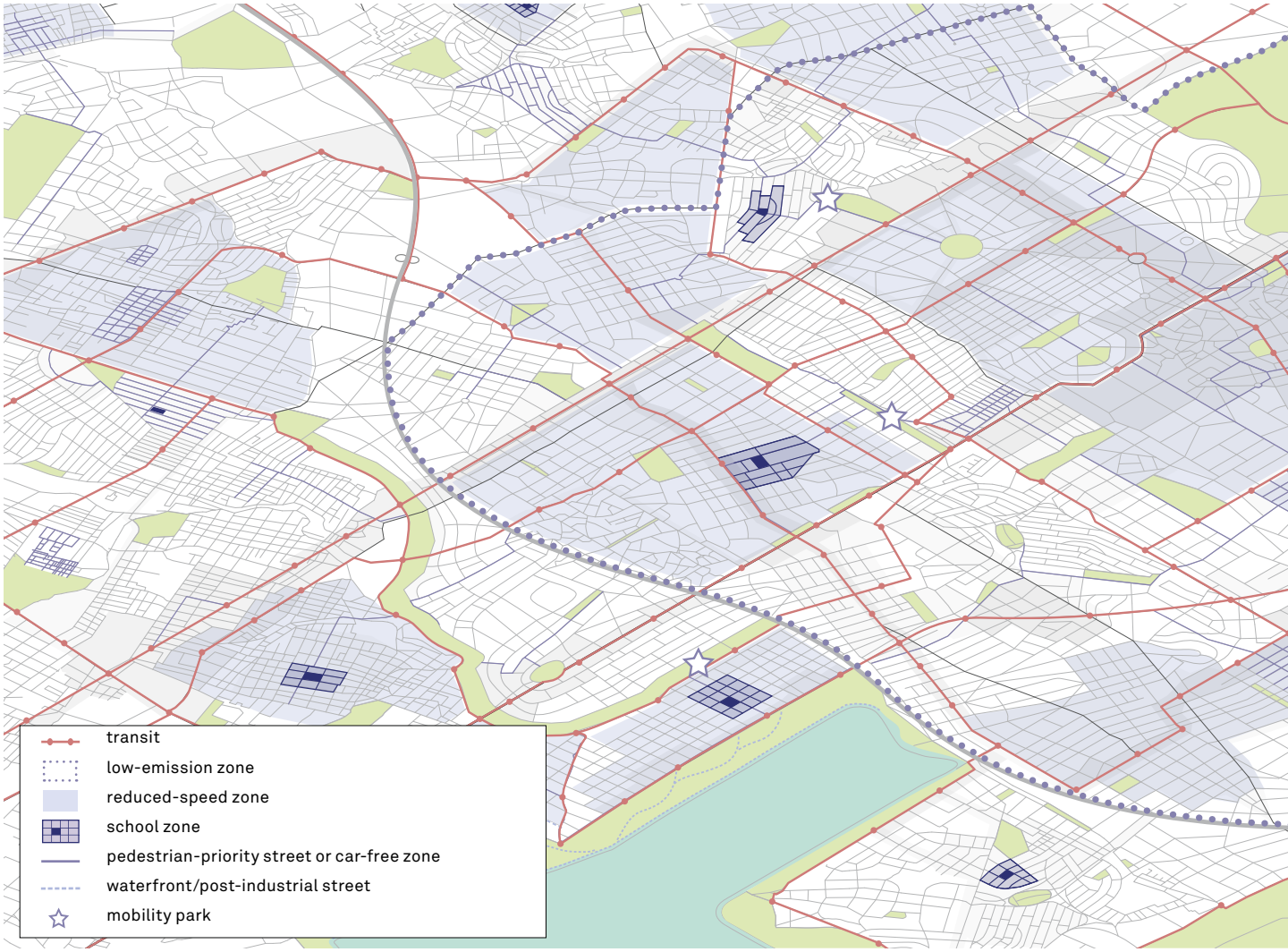
Designing at the detail scale means designing at a human scale. Children experience the street at a different height and speed than adults, which means they also experience details more intimately. Street design at the city, neighborhood, and block scales is supported by getting the details right. A sidewalk without a pedestrian crossing or ramp will make walking an unsafe option for children, but a new mural on a blank wall might spark a conversation between a child and their caregiver, a well-placed bench might provide a spot for much-needed rest, and a pattern of markings on utility poles might help a child with learning to count. *For more information, see Chapter 5.*

When redesigning streets, it is important to identify areas for detailed improvements or added amenities, and to carefully review designs and dimensions before construction to ensure all clear paths, turning radii, placements, and overall widths are adequate. Coordinate with landscape and utility agencies to ensure design standards are met and to plan ongoing maintenance. Update standard street design codes, manuals, and practices accordingly to ensure each detail supports safe, accessible, and comfortable streets.

# 2.2 | **Planning Streets for Kids at the City Scale**

Over one billion children currently live in cities, and by 2050, 70% of the world's population will live in urban areas.[2] The well-being and safety of children can be an effective cause for uniting policy makers in setting a strong vision for a city for kids. Some cities compete globally on livability factors while others struggle to provide a safe, thriving, and healthy urban environment for all families.

While access to housing, water, sanitation, and education is fundamental for children's well-being, another key contributor to urban livability is determined by mobility choices offered by urban streets, how easily families can access local services, and the overall quality of the public realm.

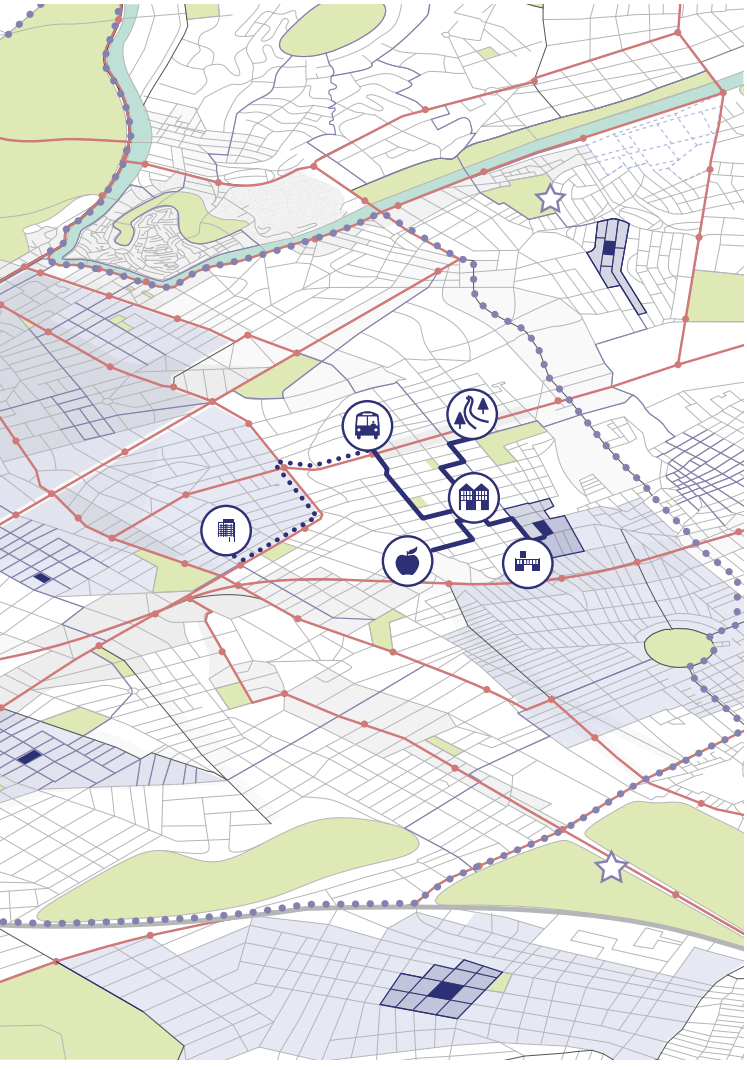



Program and cluster critical services and destinations to reduce trip chaining and journey durations for caregivers and kids.

Reduce citywide speed limits and implement reduced-speed zones in residential neighborhoods and around schools, hospitals, and other destinations with high volumes of children and caregivers.

Introduce low-emission zones in city centers or around key destinations for children and families.

Identify areas for pedestrian-priority/car-free streets and districts or limited-access zones in city centers or other areas with high pedestrian volumes.



Closely coordinate land use, density, and transportation planning and policy to ensure that critical services are accessible by transit.

Ensure that city codes, policies, and design approaches result in safe, accessible, and comprehensive pedestrian networks. *For more information, see page 26.*

Design a citywide cycle network with safe facilities that cater to young children and families using bicycles and other micro-mobility modes. Complement with cycle-share systems. *For more information, see page 28.*

Dedicate space within the street network to prioritize safe, efficient, and sustainable transit modes for families, such as micro-transit, buses, and light rail. Implement support for last-mile connectivity to transit hubs. *For more information, see page 30.*

Consider removing parking minimum policies, setting parking maximums in local development regulations, implementing demand-based pricing for on-street parking, or limiting parking to residential areas.

Ensure equitable access to parks and open spaces as critical neighborhood services. Prioritize street transformations into pedestrian-only streets and plazas in neighborhoods that have less access to quality public space so that kids have nearby places to play.

Improve accessibility for hillside neighborhoods. Consider stairway improvements, emergency-vehicle access, the provision of critical services, and creative mobility improvements such as escalators or cable cars.

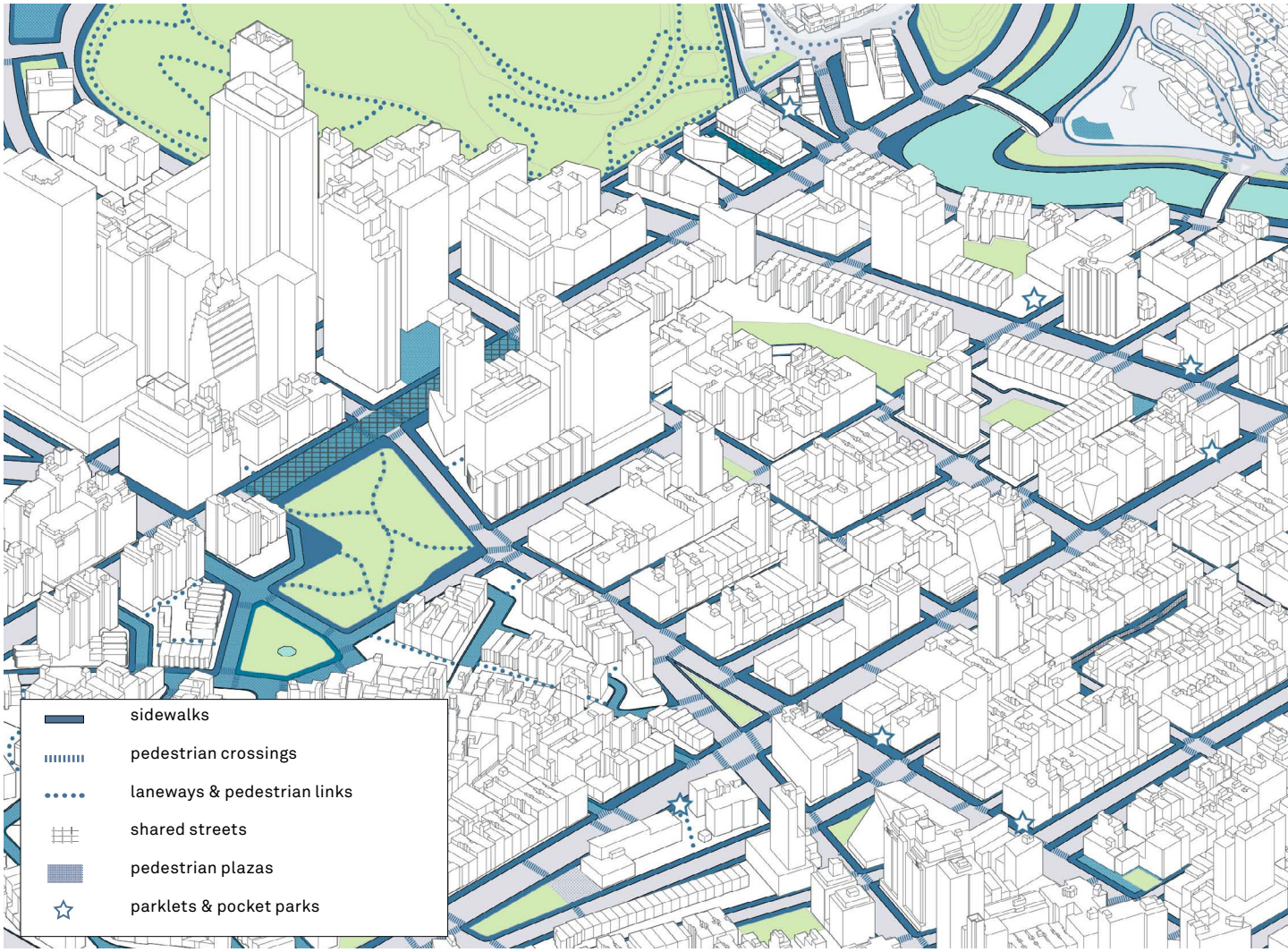
Develop a sustainable urban freight management plan to support local economies while minimizing traffic congestion, air pollution, greenhouse gases, noise pollution, and road traffic incidents.

Identify untapped potential in post-industrial waterfronts or districts to improve access for kids and families.

Provide local mobility parks where children and families can go to learn to ride bicycles and interact with other transportation modes safely before navigating streets.

# 2.3 | **Neighborhoods for Walking**

Because children and caregivers are often on foot and may have a limited range of mobility, designing a comprehensive walking neighborhood is critical to allow them to explore places close to home, to easily access key services, and to meet and connect with neighbors. A safe, accessible, connected, and continuous walking network can be provided through a combination of the facility types outlined below, such as sidewalks, shared streets, pedestrian-only streets, and laneways, while additional elements and amenities improve the comfort and enjoyment of the street as a public space. *For more information on items marked with an asterisk, see Chapters 4 and 5.*



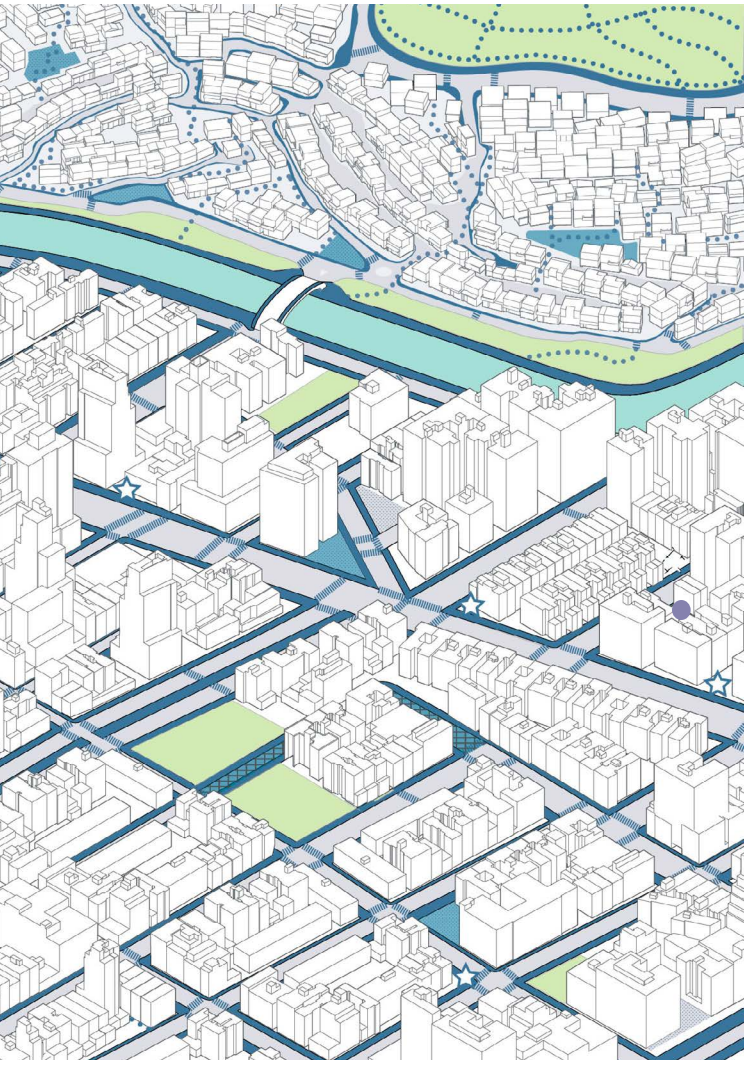

Ensure every street has safe, accessible sidewalks with a minimum 1.8 m clear path.*

Widen sidewalks in areas with high volumes of pedestrians, on commercial corridors, and around key destinations.

Identify streets to be designed as shared streets, where vehicles can access the space at very slow speeds but priority is given to pedestrians.

Design plazas to simplify complex intersections and offer additional spaces to spend time.

In commercial corridors, work with local businesses to develop parklets and other small public spaces.



Plant trees and landscaping to improve the comfort of kids and caregivers while walking.*

Frequently spaced lighting allows safe walking and rolling at all times of day.

Identify areas to remove vehicles (maintaining emergency vehicle access) and design pedestrian-only streets in each neighborhood, creating more local dedicated spaces for kids to play and spend time.

Human-scale block fronts and engaging building facades with space for businesses to spill out make walking journeys more interesting and help activate street life.

Design curb extensions at each corner when a street has a parking lane to improve visibility and shorten crossing distances.

Provide pedestrian ramps or raised crossings to improve accessibility.

Identify vacant lots within the neighborhood that might be redesigned in coordination with street transformations.*

Provide frequent places to sit and pause.*

Provide places to play and learn along daily journeys.*

Designate utilities to the sidewalk's furniture zone to ensure that clear paths remain accessible.

Ensure clear and engaging wayfinding.

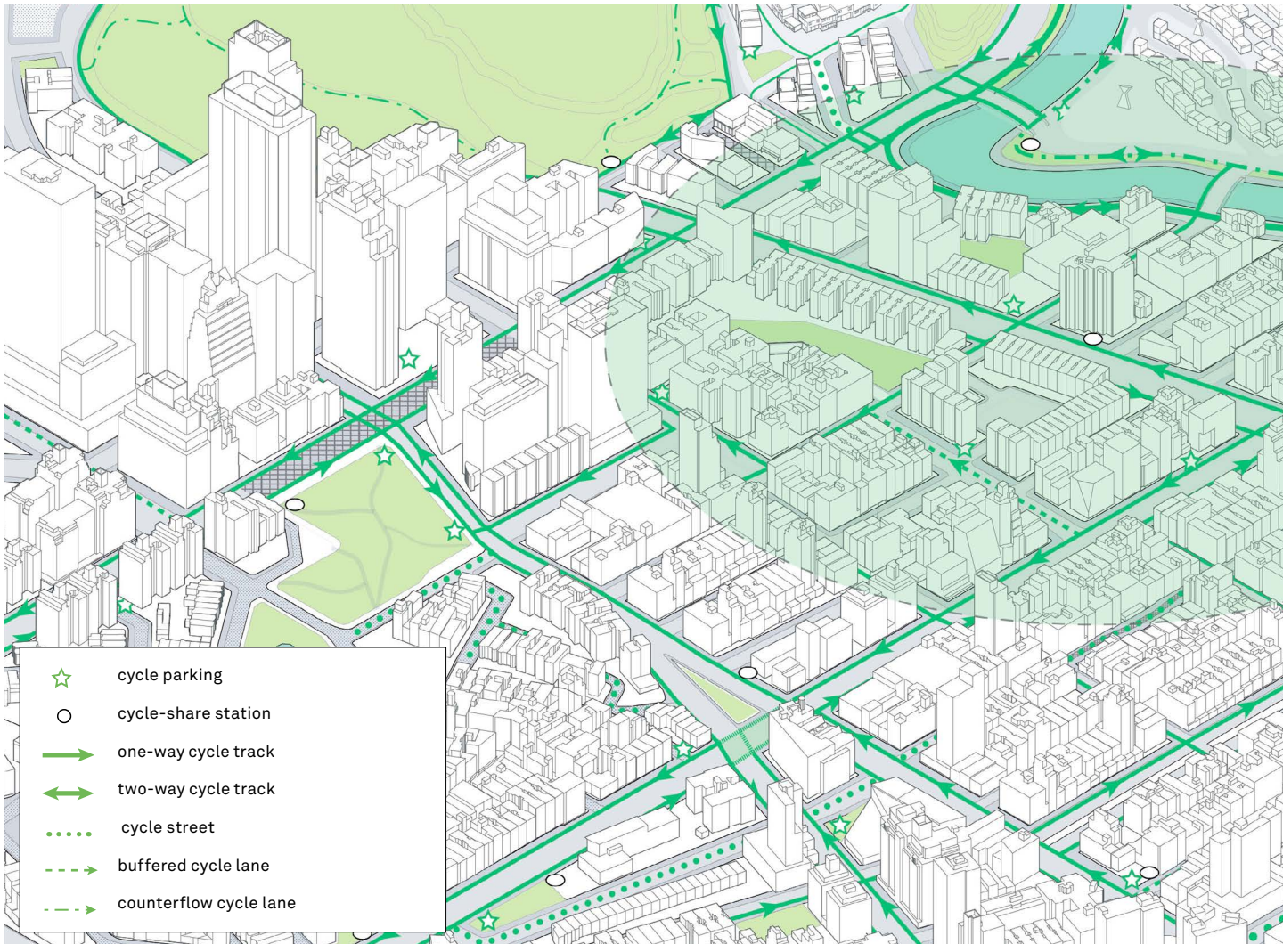
Time traffic signals to provide safe, comfortable crossings for children.

Provide safe and frequent pedestrian crossings at all intersections.*

Create short blocks or break down existing blocks with laneways to increase permeability and walking route options.

# 2.4 | **Neighborhoods for Cycling**

For children and caregivers to choose cycling as a means of moving about their neighborhoods, a comprehensive cycle network must be planned, designed, and implemented across all streets and intersections. Networks should be safe, connected, comfortable, and direct. A combination of cycle facility types can be used to work with different street typologies, local contextual considerations such as topography and climate, and the locations of key destinations. Supporting elements such as cycle parking, signals, cycle share, and other design details are critical to contribute to a network that works for people of all ages and abilities. *For more information on items marked with an asterisk, see Chapters 4 and 5.*

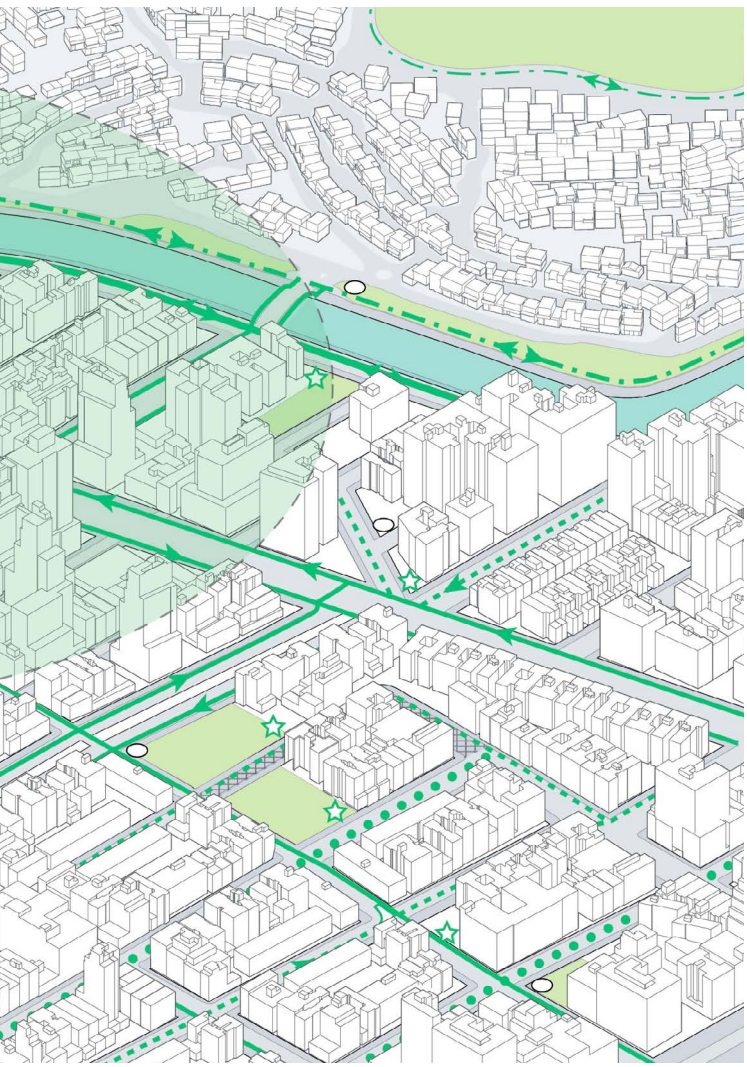



Filtered permeability improves cycle network connectivity and allows cycling children to take shortcuts by placing physical barriers at intersections that divert vehicular movements but allow cyclists to filter through.

☆ Cycle parking placed throughout a neighborhood, including space for larger cargo bicycles, increases convenience and predictability for caregivers and kids who cycle. Develop secure parking near all key destinations.

Advanced stop bars with increased distance allow caregivers using cargo bicycles to carry children to safely wait in front of vehicles at signalized intersections.

Mid-block rest areas allow caregivers or families to pull over, pause, or wait for others out of the way of other cyclists when kids are learning to cycle.



⇄ Protected cycle tracks provide physical protection between cyclists and moving vehicles. They can run in a single direction, be bidirectional on one side of the street, or run in the opposite direction of other vehicle traffic.*

Waterfront trails, park paths, and other shared-use paths provide relaxed, comfortable cycling and walking. These can act as the spine of a child-friendly urban cycle network.

• • • Cycle streets or "quiet streets" have very low motor vehicle volumes, allowing families to share the space with vehicles moving at slow speeds.*

Protected intersections protect cyclists from turning vehicles, make them more visible to motorists, and help manage complex movements.*

○ Place frequent cycle-share stations near schools, parks, and other key destinations.*

Safe interactions with transit facilities allow for cycle facilities to continue alongside safe transit boarding.

Dedicated cycle signals improve safety and confidence for families cycling, particularly at intersections with high vehicle volumes.

Wayfinding, signs, and markings help build confidence for less confident cyclists to know how to navigate the network and reach key destinations. Conflict markings should provide a visual cue to all users of potential conflict areas, such as driveways.

Cycle bridges and underpasses increase cycle network connectivity when meeting bodies of water or heavy railroads.

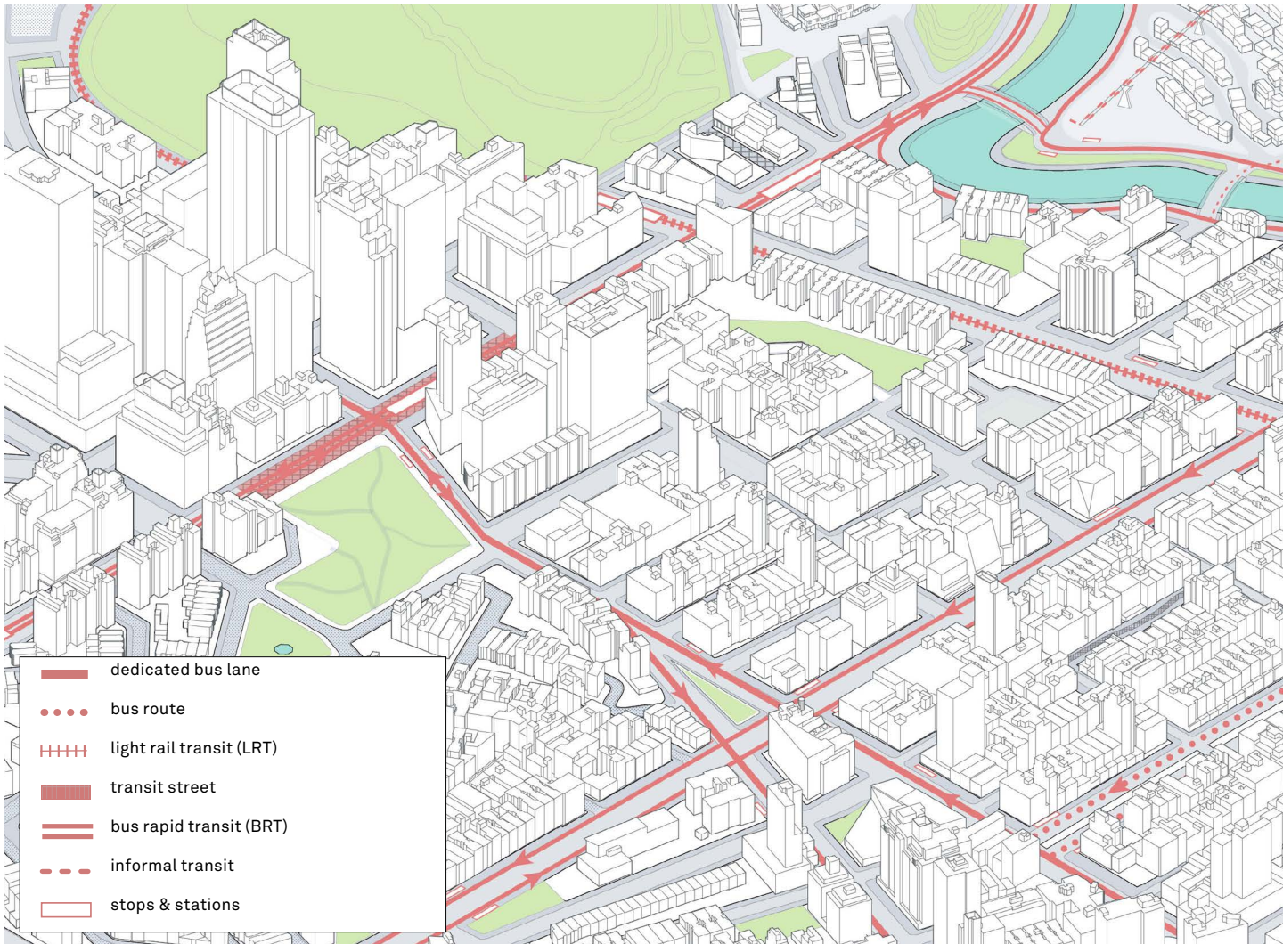
Live cyclist counters can provide additional excitement and learning opportunities for kids to know that their cycling counts toward a larger effort.

Footrests and grab bars increase comfort for cyclists and help kids keep their balance when waiting at intersections.

Cycle repair stations spaced throughout neighborhoods provide convenient locations for families to pump tires or complete simple repairs.

# 2.5 | **Neighborhoods for Transit**

When systems are not designed with kids and families in mind, taking transit with a child can be a frustrating and uncomfortable experience. Designing affordable, convenient, frequent, and comfortable transit ensures that families can access their city and kids can move more independently, interacting with the people and environment around them. Dedicating lanes for buses, light rail, micro-transit, or school buses means streets can quickly and efficiently move more people in limited space, and that air can be cleaner and streets safer. Improving facilities such as transit stops, wayfinding, and signals complements cities' walking and cycling networks to make transit a viable and enticing choice for families.

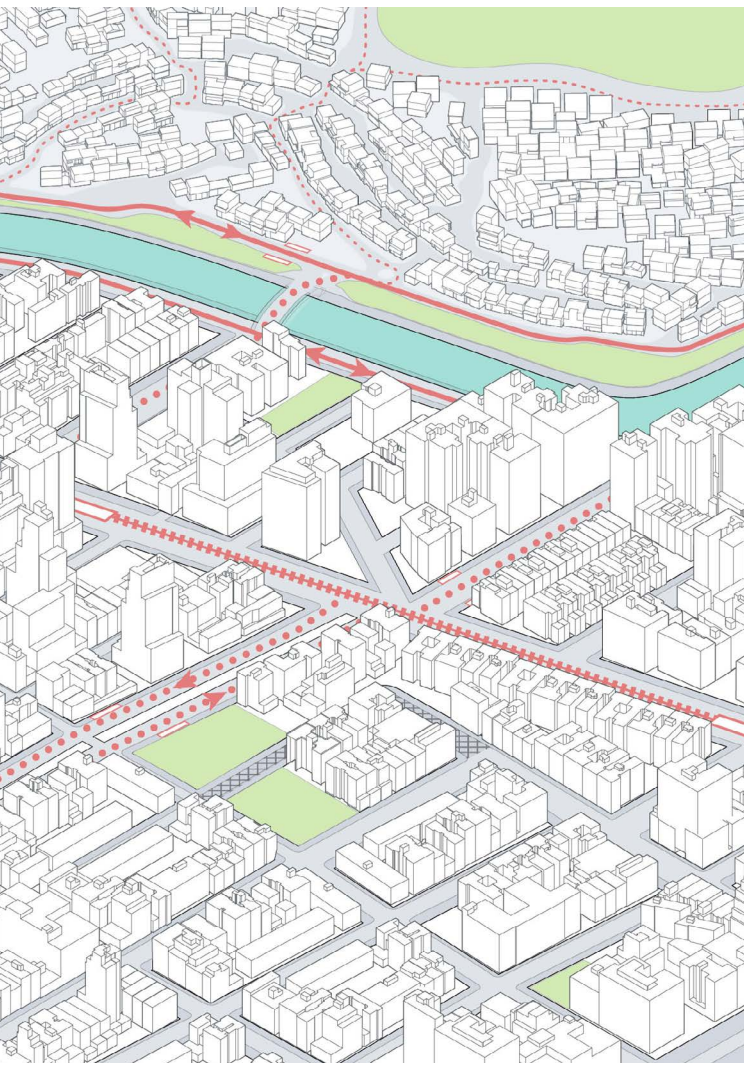



Transit Signal Priority (TSP) tools improve efficiency by reducing dwell time for transit vehicles at signals and lengthening green phases to help families reach their destinations more quickly.

Schedules and real-time information improve predictability by providing information about when transit vehicles are arriving.

Accessible boarding at transit stops and on transit vehicles assists caregivers with strollers and people with disabilities in using transit.

Traffic enforcement cameras support road safety by detecting violations from motorists who speed, run red lights, or travel in bus-only lanes. They can also be used for charging motor vehicles using limited-access zones.



Dedicated transit lanes prioritize the movement of buses or light rail through streets with painted surfaces or markings, restricting access for private vehicles and improving travel times.

Bus rapid transit (BRT) lanes and stations provide high-capacity and frequent transit service to cover long distances.

Transit streets share priority between transit vehicles moving at safe speeds (10 to 30 km/h) and pedestrians. Private vehicular access is prohibited or limited.

Off-board fare collection can speed up the onboarding of transit by asking riders to pay fares before they board the bus.

Transit stops provide places to wait with seating, lighting, and shelter from the elements. They are an ideal place to incorporate play, games, and learning opportunities to fill the time spent waiting for transit. Design new transit stops and retrofit existing stops with kids in mind, prioritizing stops near children's facilities.

Clear wayfinding helps kids and caregivers navigate local transit systems.

Cycle facilities and parking at transit stops help make integrated trips more convenient.

Consider transit vehicle design to identify opportunities to update transit fleets to cleaner vehicles that reduce emissions, improve accessible boarding, provide storage space for strollers, and increase visibility from the driver's seat to minimize blind spots.

Consider family-friendly fare structures in which kids ride free or at discounted prices.

Seating at transit stops and stations ensures waiting times are more manageable. Consider including playful designs and incorporating color and artwork.

Boarding bus bays provide dedicated space for school buses or micro-transit to drop off and pick up kids and families.


ISUZU



Addis Ababa, Ethiopia

# 3 Street Design Strategies

Street design must meet the needs of children as well as pedestrians, cyclists, and transit users, all in a constrained space. Design strategies in this chapter are presented as entry points for street redesign, and share the common goals of safety, comfort, and joy, aiming to make streets more efficient and more enjoyable for all users and all modes of transportation. Effective street redesign that improves infrastructure quality, slows vehicles, and protects pedestrians and cyclists often requires applying multiple design strategies. These strategies may span levels of intensity and investment, from low-cost measures to large capital projects or systemic changes. The most successful street improvement projects combine strategies for a unique solution that best fits a street's local context.

# 3.0 | **Street Design Strategies**

## 3.1 | **Upgrade:** Meet Basic Needs

Upgrading streets to meet basic standards of safety and accessibility is the first step to child-friendly streets: it is fundamental to ensure that streets do not endanger children and others. At a minimum, streets should have adequate facilities for walking, cycling, and taking transit, including a continuous sidewalk network; frequent, marked crossings; signage; and basic amenities like lighting, signals, and water management. If funds are limited, prioritize pedestrian and cycle facilities.



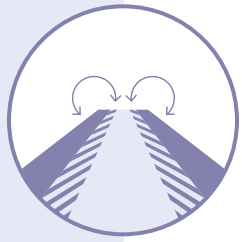
## 3.2 | **Protect:** Design for Appropriate Speeds

Worldwide, road traffic crashes are a major risk for all street users, particularly unprotected users. Lowering vehicular speeds to an appropriate level on urban streets through design and policy will reduce both the incidence and severity of traffic crashes. To manage speeds, roadway engineers, designers, operators, and managers should select a safe target speed for the local context and match that to both the design speed and the posted speed. In urban areas where people walk, cycle, and roll, the safest target speed is seldom above **30 km/h**.



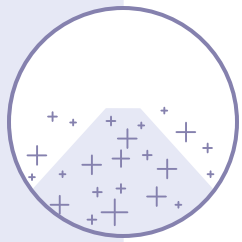

## 3.3 | **Reclaim:** Allocate Space for People

Children, caregivers, and other people deserve equitable space on urban streets. In recent decades, streets have been designed for motorists: for the movement and storage of private vehicles. Urban street space is limited, and it is possible to move more people using the same amount of space. Reclaiming space from private vehicles increases overall street capacity; lessens congestion, air pollution, and unpleasant street conditions; greatly improves safety; and gives more space to people for play and spending time.



## 3.4 | **Activate:** Incorporate Play and Learning

Streets are part of children's everyday routines and offer spaces to integrate play and learning. Opportunities for children to play are decreasing and are often limited to parks and schools. Sidewalks, building edges, and reclaimed parking spaces can provide moments of play and places to add playful elements.



## 3.5 | **Extend:** Integrate Adjacent Spaces

A street is not just the ground plane, but all spaces and surfaces that influence a street user's experience. A thoughtfully designed street can still be limited by factors such as unappealing facades, underused lots, and lack of activity. Opportunities to extend the experience of the street can be found in building edges, blank walls, setbacks, private lots, school playgrounds, parks, plazas, local businesses, and more. Extending includes physical design, programming, and setting new policies.





Set minimum standards to improve safety, accessibility, and mobility.

| Build key facilities and elements where missing. | Upgrade and fix street infrastructure that needs repair. | Clean and maintain existing street infrastructure. |
|---|---|---|

## UPGRADE PEDESTRIAN CROSSINGS

All pedestrian crossings should be clearly marked, closely spaced, and at-grade, regardless of paving pattern or material. Ensure that all key road markings are repainted or upgraded and new markings are added where needed. Update signal timing policies and practices to serve pedestrians moving at slower speeds, and keep wait times for pedestrians **below 40 seconds.** *For more information, see Chapter 5.1.*

## BUILD OR IMPROVE SIDEWALKS

Prioritize pedestrians by ensuring that sidewalks are usable, continuous, safe, and accessible. Build new sidewalks if none exist, extend sidewalks if they are too narrow, and repave old or crumbling sidewalks that pose accessibility challenges. *For more information, see Chapter 5.2.*

## BUILD OR IMPROVE ESSENTIAL CYCLE FACILITIES

Protected cycle facilities are the best option for all street users. Ensure safety for cyclists by adding protected cycle facilities to higher-volume streets or by turning lower-volume and lower-speed streets into shared streets. *For more information, see Chapter 5.9, Global Street Design Guide Chapter 6.4, and Urban Bikeway Design Guide.*

## CLEAN AND MAINTAIN THE STREET

Regular maintenance includes street cleaning and identifying and repairing any issues in the right-of-way, including street markings. Dirty and unmaintained streets discourage use, especially by children.

## ADD ADDITIONAL ELEMENTS

Implement or improve basic utilities such as street lighting and stormwater management. Consider adding amenities like water fountains, public toilets, and trash cans. *For more information, see Chapter 5.10.*

Speed kills. Child traffic fatalities are preventable by designing for safer speeds.

Set policy for speed limits citywide.

Reduce speed limits on most urban streets to 30 km/h.

Reduce speed by design.




## REDUCE SPEED LIMITS TO 30 KM/H

Use a proactive strategy to approach setting speed limits: reduce speed limits and match them to design speeds of **30 km/h**. Higher speeds narrow motorists' peripheral vision and impact their reaction times.[1] The chance of severe injuries or fatalities is reduced if crashes occur at impact speeds of **30 to 40 km/h**.[2] In exceptional circumstances, some larger streets may have speed limits of **40 to 50 km/h**. Smaller streets, including shared streets and pedestrian-priority streets, should have maximum speed limits of **10 to 20 km/h**.

## SLOW SPEEDS BY DESIGN

Street design has a strong effect on motorists' default operating speed. Reduce the speed of through-moving traffic by minimizing the number of general-traffic lanes, and by adding horizontal and vertical deflection elements such as chicanes and speed tables where needed. Reduce turn speeds by tightening curb radii and designing compact intersections. *For more information, see Global Street Design Guide Chapter 6.*

## PHYSICALLY AND VISUALLY NARROW LANES

Vehicle travel lanes should be no more than **3 m** wide on urban streets. On streets with buses, freight, and other large vehicles, one travel lane may be up to **3.3 m** wide. Narrow lanes encourage slower speeds,and motorists are more cautious on streets that are visually narrowed by trees, street furnishings, consistent buildings, and other urban elements.[3]

## PROTECT CYCLISTS

On streets with operating speeds above 30 km/h or other stressors, provide protection through buffers or raised facilities to increase comfort and safety for cyclists. *For more information, see Chapter 5.8.*

## UTILIZE STREET OPERATIONS AND SIGNALS

Use operational strategies such as low-speed signal progression, leading pedestrian intervals (LPI), leading bike intervals (LBI), and banning turns. On major streets, reduce the distance between safe crossing points by providing signalized crossings at least every **200 m**. *For more information, see Chapter 5.1.*

# 3.3 | **Reclaim:** Allocate Space for People



Space is our most precious resource in cities because it is limited. How street space is distributed determines mobility efficiency and how people actually use streets for their daily activities.

Disincentivize private vehicle use.

Reclaim space for kids to use for play.

Reallocate road space for efficient and sustainable mobility choices.

## REALLOCATE SPACE FOR SUSTAINABLE AND EFFICIENT MOBILITY

Replace mixed travel lanes with transit-only lanes, protected cycle facilities, or sidewalks to move more people using less space and fewer vehicles. *For more information, see Chapter 4 and Transit Street Design Guide.*

## MANAGE VEHICULAR VOLUMES AND PARKING DEMAND

Alongside providing safe and affordable transit service and cycling facilities, reduce motor vehicle volumes on urban streets by removing travel lanes and through limited access areas, parking and curbside management, and road pricing. Price parking to disincentivize private vehicle use. *For more information, see Global Street Design Guide Chapter 8 and Blueprint for Autonomous Urbanism.*

## RECLAIM EXCESS SPACE

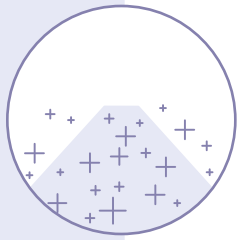
Narrow travel lanes, tighten corner radii, and add refuge islands to make intersections compact. Activate reclaimed areas for pause and play spaces, or use them for curb extensions, buffers, utilities, or stormwater management. *For more information, see Chapter 3.4 and Don't Give Up at the Intersection.*

## CREATE PEDESTRIAN-ONLY AND SHARED STREETS

Reclaim entire streets: open streets to people by closing them to vehicles through pedestrian-only streets, or create shared streets by removing distinctions between pedestrians, cyclists, and cars and designing for low-speed travel, usually **10 to 15 km/h**, for all modes.

# 3.4 | **Activate:** Incorporate Play and Learning

Play is important for people of all ages. Streets provide opportunities to incorporate play into everyday life.



Provide spaces to pause, play, and stay.

Incorporate learning through educational elements.

Program streets for child-friendly activities.

## PROVIDE SPACES OF DIFFERENT SIZES

Integrate both small and large spaces for children and caregivers to pause and enjoy streets. Seating, nooks, parklets, and plazas offer opportunities for pause and play spaces. *For more information, see Chapter 5.2.*

## ADD PLAYFUL AND EDUCATIONAL ELEMENTS

Provide opportunities for unstructured play on sidewalks, medians, and plazas and near transit stops by adding elements like murals, artwork, and installations. *For more information, see Chapter 5.5.*

## INCORPORATE NATURE, TREES, AND LANDSCAPING

The presence of nature and landscaping on urban streets encourages children and caregivers to spend more time there; encourages play, learning, and creativity; and improves mental health. *For more information, see Chapter 5.6.*

## ADD PROGRAMMING

Add programming for temporary events such as open streets and play streets that offer kids and families more space to play. *For more information, see Chapters 3.5 and 6.6.*



Extending the street experience into adjacent spaces keeps a street more active and interactive, adds eyes on the street, and takes advantage of underused areas.

Extend street design into adjacent unbuilt spaces.

Activate adjacent facades.

Engage local residents and businesses to activate ground-floor uses.

### INCORPORATE ADJACENT SETBACK SPACES

Consider the use of adjacent spaces, including private spaces such as setbacks and school playgrounds and around museums, libraries, and more. Incentivize property owners to remove or redesign fences and walls around these spaces to create more engaging street experiences.

### ALLOW BUSINESSES TO SPILL OUT ONTO THE SIDEWALK

Define a frontage zone on wider sidewalks, and allow and regulate the use of this space for commercial activities, dining, and general public use. Allow street vendors to work in the street furniture zone, buffer zone, or in curbside lanes rather than in a sidewalk's clear path.

### ACTIVATE EMPTY LOTS

Look for opportunities to extend the street experience into city-owned or private lots adjacent to the street by physically extending through design or adding programming.

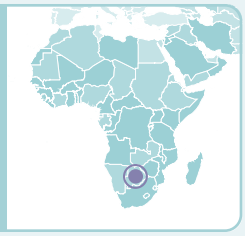
### ACTIVATE ADJACENT FACADES

Allow, require, or incentivize ground-floor retail; regulate the size of building frontages and frequency of building entrances; encourage transparency in facades; and require minimum transparency for gates and fences. Blank walls can be activated by murals and other artwork. *For more information, see Chapter 3.4.*

### UPDATE ZONING

City agencies should update zoning regulations and other policies to promote active building frontages and streets.

CASE STUDY



# Bophirima Primary School

**Location:** Gaborone, Botswana

**Implementing organization(s):** Amend, Society of Road Safety Ambassadors, Child Health Initiative, FedEx

**Timeline:** August-November 2018







## OVERVIEW

Students from Bophirima Primary School found it challenging to safely go to school: the nearby area had limited pedestrian facilities and safety measures in place. In 2017, two children were injured there during their daily commutes. This scenario motivated the nonprofit organization Amend to upgrade the streets and intersections around the school. Through the School Area Road Safety Assessments and Improvements (SARSAI) program, Amend implemented a set of infrastructure improvements near the school such as new sidewalks and pedestrian crossings, including a mid-block crossing; speed management measures; delineating moving lanes to separate vehicles and pedestrians; and adding signage.

## STRATEGIES

**Upgrade:** Built new sidewalks and pedestrian crossings, delineated moving lanes

**Protect:** Improved existing speed bump

## IMPACT

Estimated 26% reduction in serious injuries to children

Increased level of safety as measured through iRAP's Star Rating for Schools

Reduced operating speeds









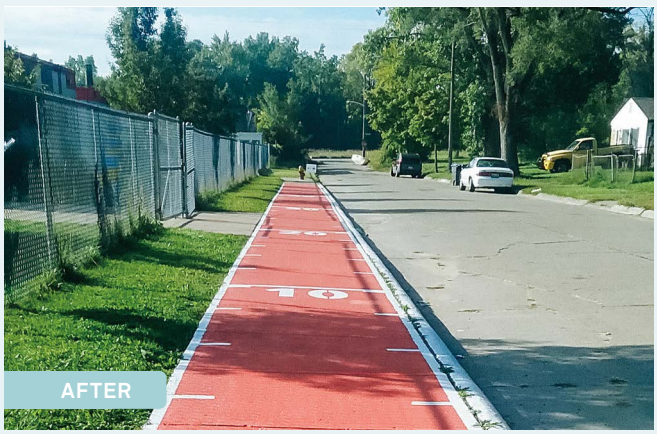
# Brightmoor Runway

**Location:** Detroit, USA

**Implementing organization(s):** University of Michigan, KaBOOM!

**Timeline:** 2016




## OVERVIEW

In Detroit, upgrading a broken sidewalk was an opportunity to create a fun experience for local students in Detroit's Brightmoor community. The path was transformed into a running track paved with a red rubber surface. Painted distance numbers and a speed display encourage both children and adults to run along this "racetrack" and have fun while waiting to board school buses.

The project was inspired by conversations with partners, including students and their teachers, local block clubs, community centers, and churches. The intervention was supported by the Play Everywhere Challenge program led by KaBOOM!




## STRATEGIES

**Upgrade:** Improved sidewalk surface, added motion-activated solar lighting

**Activate:** Incorporated interactive play

CASE STUDY

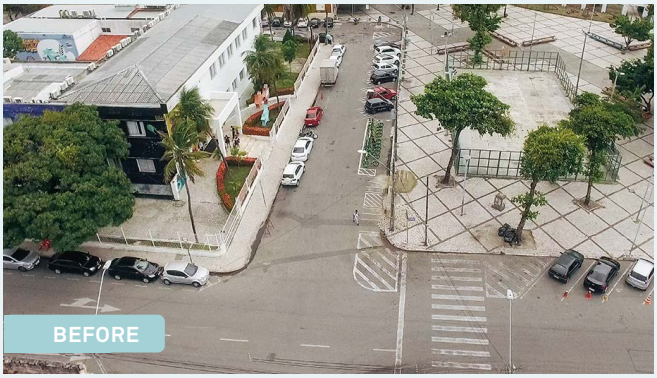


## Dragão do Mar

**Location:** Fortaleza, Brazil

**Implementing organization(s):** City of Fortaleza, NACTO-GDCI, Bloomberg Initiative for Global Road Safety

**Timeline:** 2018







### OVERVIEW

This project, part of Fortaleza's Cidade da Gente (City of People) program, transformed a 5,000 $m^2$ site in the city center. This site was inactive and unsafe but had potential to become a leisure destination. The streets were reshaped with paint and moveable street furniture. Tighter turning radii and fewer and narrower travel lanes allowed for wider sidewalks and shorter crossing distances. These improvements were initially planned to be temporary, but due to high public support and increased safety, they were made permanent.

### STRATEGIES

**Upgrade:** Painted new pedestrian crossings

**Protect:** Removed and narrowed travel lanes, installed refuge islands, built curb extensions

### IMPACT

After the transformations, 90% of people interviewed approved of the project and 86% felt "safe" or "very safe" from motor vehicles.

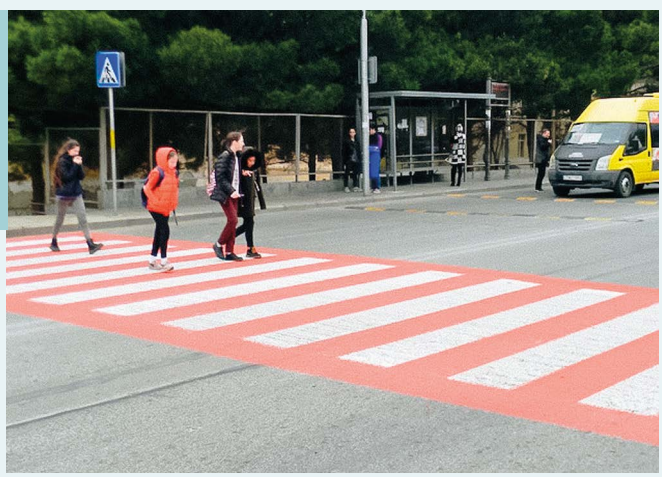
91% fewer people walked outside of marked pedestrian facilities.

There was up to 80% reduction in crossing distances.

34% more people walked in the Dragão do Mar area.

On average, 30% more people stayed and spent time in the area.

SNAPSHOT



## Safe School Zones

**Location:** Tbilisi, Georgia

**Implementing organization(s):** Partnership for Road Safety, Eastern Alliance for Safe and Sustainable Transport, Child Health Initiative

**Timeline:** 2019-2020

### OVERVIEW

Child fatalities from road traffic crashes were a growing problem in Georgia, with 40 children under age 16 killed from 2016 to 2017. Many school zones lack safe infrastructure to protect children from road traffic crashes, including adequate crossings or speed-reduction measures. The Partnership for Road Safety worked with the Ministry of Education and Science and the Roads Department to add eight new raised pedestrian crossings and three sets of traffic lights in Tbilisi. Additionally, speed limits were reduced to 30 km/h from 40 km/h on major roads citywide, and 30 km/h speed limit signs were installed near school zones.



CASE STUDY

## Lane Tech High School

**Location:** Chicago, USA

**Implementing organization(s):** Chicago Department of Transportation, Lane Tech College Prep High School

**Timeline:** 2013-2017

### OVERVIEW

A main entrance to Lane Tech College Prep High School is located on a major street with high vehicular volumes and frequent speeding. The high school is near residential and commercial areas through which students walk. Several crashes involving students became a major concern for the school community.

The city of Chicago started investing in improvements along the road in 2014, which included pedestrian crossings, automated speed cameras, and pedestrian refuge islands connected to raised medians. Based on the success of these improvements and acknowledgment that there was a need to increase safety near another school entrance, the city also invested in raised pedestrian crossings, curb extensions, and cycle lanes on another street bordering the school. Travel lanes were narrowed and pavement striping, signage, and new cycle racks were also implemented. Bus stops were relocated to align with new pedestrian crossings. As a result, students crossed in crosswalks more often.

### STRATEGIES

**Upgrade:** Painted new pedestrian crossings, installed new pedestrian ramps, painted cycle lanes

**Protect:** Relocated bus stops to align with crosswalks, raised pedestrian crossings, narrowed travel lanes, built raised medians, added refuge islands and curb extensions, installed speed-reduction signage and automated speed cameras

### IMPACT

Reduced vehicular speeds



Shortened pedestrian crossings

Improved access for students cycling

### KEYS TO SUCCESS

Leveraging community awareness and collaboration: community concern about the safety problem triggered efforts from local leaders, the school, and the local authority to work together and look for solutions.

Prioritizing funding: political support led to funds being prioritized from increasing safety for school students.

Learning from early phases and expanding success: breaking up the project into phases can help the implementation process. The success (or, in other cases, failure) of initial improvements can help inform and make the case for future investments.

SNAPSHOT

## School Zone Improvements

**Location:** South Korea

**Implementing organization(s):** Multiple South Korean cities

**Timeline:** 1999-2012

### OVERVIEW

The initiative, in several Korean cities, creates safer routes from homes to schools through traffic-calming measures. Over 16,000 locations have been improved, contributing to 57% fewer traffic-related fatalities within designated school zones. Improvements may include removing street parking, building new sidewalks, installing signs and speed bumps, painting pavement, and installing fences to prevent vehicles from parking on sidewalks. School zones have become common policy for South Korean schools.



CASE STUDY



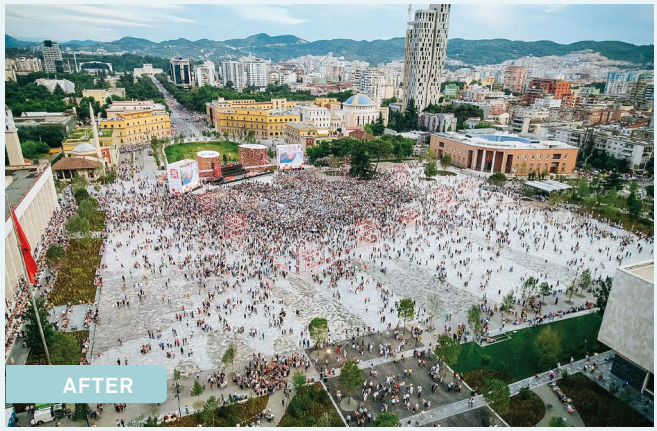
# Skanderbeg Square

**Location:** Tirana, Albania

**Implementing organization(s):** City of Tirana

**Timeline:** 2008-2017




## OVERVIEW

Skanderbeg Square is located in the core of Tirana, Albania's capital city, at the intersection of two major roads. Originally part of an urban plan implemented by Italian architects, it became a symbol of the Communist regime in the late 1930s. The square is bordered by several major buildings, including City Hall, Palace of Culture, government ministries, and museums.

By 2010, Skanderbeg Square was largely empty and surrounded by parking or travel lanes for vehicular traffic. The mayor converted the square into a pedestrian- and transit-only zone. However, with a change in administration, the square was returned to a space for motor vehicles the following year.

In 2016, a new mayor reintroduced the 2010 plan to prioritize pedestrians and transit in the square and re-established a car-free zone.

Redesigning the square required transforming this large, once-monumental space into a cozier plaza that would be part of residents' daily lives. To achieve this, gardens were introduced along the perimeter to soften its edges, create a feeling of enclosure, and spatially connect the adjacent buildings. Parking was moved to an underground parking structure. Additionally, the center of the esplanade was raised 2 m with a 2.5% surface slope toward the edges. A colorful mosaic paving, water features, benches, shade, and moveable street furniture enhance the experience of using the square.

The redesign created opportunities for people to stay, meet, play, and relax. Buildings adjacent to the square are more vibrant and active.

## STRATEGIES

**Reclaim:** Reallocate space formerly unused or used for parking for pedestrians

## KEYS TO SUCCESS

Tirana's mayor was a strong advocate for the new car-free square.

Tirana has focused on ways to engage with children in policy making and committed to putting kids first in their city's agenda. During implementation, the city engaged citizens, including children. Children were considered the best advocates for transforming the square.

To promote the pedestrianization of the square, the city created car-free days and encouraged caregivers to cycle with children to school.



## Pasos Seguros

**Location:** Mexico City, Mexico

**Implementing organization(s):** Public Space Authority, Public Works and Services Authority, Mobility Authority, Public Safety Authority

**Timeline:** 2014-2015

### OVERVIEW

Pasos Seguros (Safe Crossings) is an initiative to redesign intersections with high concentrations of road traffic crashes in Mexico City. It is aligned with ongoing mobility policies and road safety initiatives. From 2014 to 2015, 54 intersections were updated along six corridors.

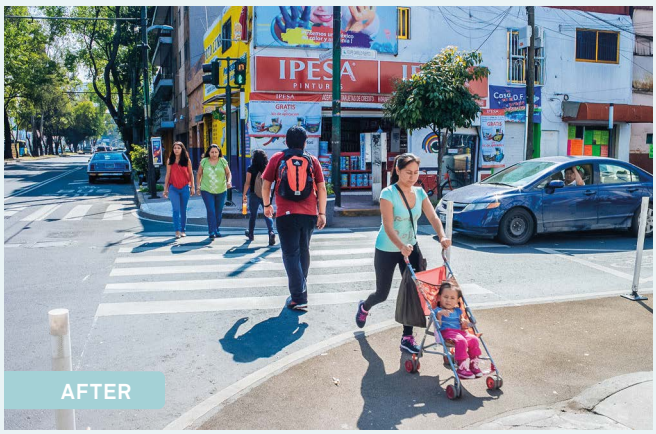
These redesigns included painting markings, installing traffic signage, building curb extensions and refuge islands, making changes in traffic signals and operations, and removing or relocating obstacles like posts, signs, and street furniture. After one year, there were 44% fewer road traffic crashes.

**53%**
**fewer conflicts involving pedestrians**

AFTER




SNAPSHOT




## Play Around the City

**Location:** Boston, USA

**Implementing organization(s):** Mayor's Office of New Urban Mechanics

**Timeline:** 2018

### OVERVIEW

Boston has encouraged playful installations and events through its Play Around the City initiative, which invites community organizations, artists, and others to apply for small grants to implement temporary interventions. The initiative explores and expands the meaning of "playful" and promotes play beyond parks and playgrounds. Through temporary projects on street spaces like sidewalks and bus stops, the team tests and measures the impact of increased access to play opportunities for children and their families. The Mystery Map, shown here, is a temporary sidewalk mural designed by artist Liz LaManche that encourages children to pause and play on the sidewalk.




SNAPSHOT

CASE STUDY



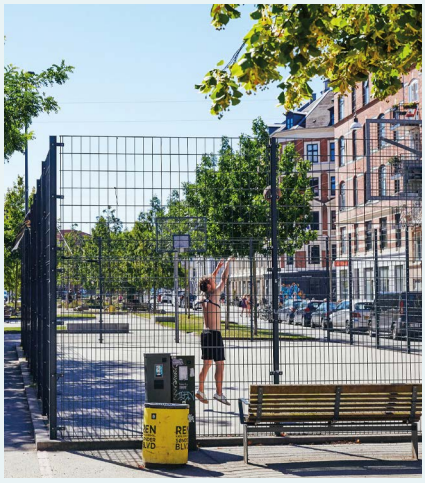
# Sønder Boulevard

**Location:** Copenhagen, Denmark

**Implementing organization(s):** City Council of Copenhagen

**Timeline:** 2004-2008





## OVERVIEW

Sønder Boulevard was built in the 19th century using urban design standards of regular city blocks and wide avenues, and the nearly 30-m-wide right-of-way includes a central median. In the 1990s, increased vehicular traffic and dying trees in the median made the street unpleasant and, therefore, underused. In 2004, the City Council of Copenhagen decided to transform the street to make it more attractive for local residents.

In each direction, travel lanes were reduced from two lanes to one, which allowed the median to widen, and speed bumps were added to slow speeds.

In addition to geometric changes, a more active and playful transformation was made possible by designing high-quality pause and play spaces for children and families. The space was activated through playful elements, including playgrounds and spaces for games and sports. Pedestrian paths, planting and landscaping, and seating extend throughout the boulevard.

## STRATEGIES

**Protect:** Installed speed bumps, narrowed travel lanes

**Reclaim:** Reduced number of travel lanes to increase median width for pedestrian use

**Activate:** Added flexible pause and play zones with seating, playgrounds, and dog parks; added landscaping; added street furniture and amenities

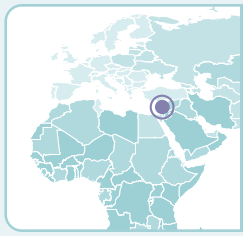
## KEYS TO SUCCESS

Engaging local residents and business owners was key to the design process. The design team held six workshops to ensure community input while developing design and implementation strategies. Through these activities, the team recognized that community members had different wants for the space. This was addressed by creating discrete zones throughout the linear park. WIth spaces for sports, children, pets, and more, these areas allow for a wide range of activities.

## IMPACT

Five years after the project opened, the City of Copenhagen studied its impact on the surrounding neighborhood. The number of successful new businesses, shops, and restaurants surrounding the site rose 375%, and the property value of the surrounding area increased by USD $56 million (from an original construction cost of USD $3 million). A satisfaction survey among residents showed that 78% of people were “happy” or “very happy” with their local public spaces, up from 22% before.

Sønder Boulevard is now the eighth-most-used public space in Copenhagen. On a list of the 10 most-used public spaces in the city, it is the only space that is not a regular tourist destination.



CASE STUDY

# Circling the Avenue

**Location:** Hadera, Israel

**Implementing organization(s):** City of Hadera, BO-Landscape Architects

**Timeline:** 2017

## OVERVIEW

Amir Avenue (Herzl Street) is a 12-m-wide street built in the 1920s and located in the center of Hadera. As part of a wider effort to renew the city's historic core, the street was identified by the municipality as a location for urban intervention. Instead of following the European boulevard tradition of a landscaped strip with seating, Circling the Avenue transformed the street's wide median into a generous space for play and socializing.

The design includes many play elements such as wooden logs, see-saws, and small hills of grass. Informal sculptural seating elements, called Yellow Circles, were designed for sitting, meeting, and play. The unique design of these pieces encourages kids and others to creatively interact with, climb on, sit in, and walk between them. The Yellow Circles are illuminated to provide light at nighttime.

Circling the Avenue has dedicated space for pedestrians and cyclists. Several cafés encourage socializing and staying, and there is space for an outdoor gallery. Ficus trees planted several decades ago provide shade. The project also added several new crosswalks for better connectivity with neighboring streets.

## STRATEGIES

**Activate:** Added play elements and seating







CASE STUDY

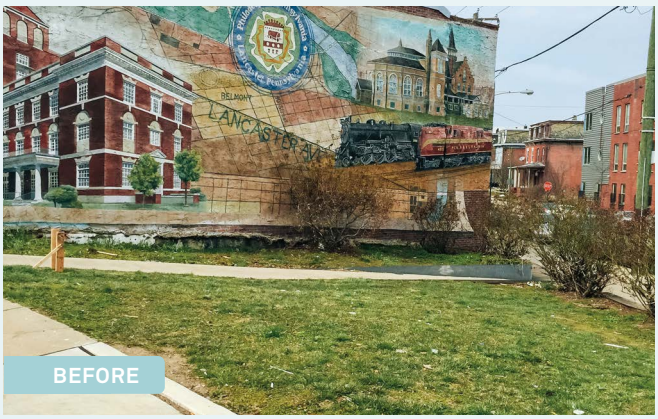


# Urban Thinkscape

**Location:** Philadelphia, USA

**Implementing organization(s):** Playful Learning Landscapes (Brookings Institution), Temple University, Belmont Alliance Civic Association, Community Bible Deliverance Kingdom Ministries, City of Philadelphia, Public Workshop, Architect Itai Palti, Science Museum of Minnesota

**Timeline:** 2015-2017



BEFORE


AFTER

## OVERVIEW

Playful Learning Landscapes wanted to explore opportunities for playing and learning through elements that can be used in public spaces, such as plazas and sidewalks. As part of the Playful Learning Landscapes initiative, this Urban Thinkscape site in West Philadelphia served as a pilot project. Located on a major thoroughfare and adjacent to a bus stop, the site responded to the criteria suggested by the community of the West Philadelphia Promise Zone, which was engaged early in the project.

The participatory design process also involved youth, nonprofits, and volunteers in developing play structures. Community members were also engaged to help construct designs on site, facilitated by design firm Public Workshop.

The project created opportunities to play and learn during children's daily journeys. There are four play and movement installations that explore different skills: a puzzle wall, to engage kids while waiting for transit and strengthen math and spatial skills; jumping feet, to encourage movement and develop impulse control; hidden figures, a metal sculpture that contains images of food, animals, and other objects and becomes a game for children and caregivers to play together; and wooden ramps with painted narrative cues that teach reading and storytelling skills.

The Urban Thinkscape project also includes wooden decking and a pedestrian path. A bench was added to the adjacent bus stop.

## STRATEGIES

**Upgrade:** Installed solar-powered lighting, improved pedestrian facilities

**Activate:** Added play and educational elements, added landscaping

**Extend:** Used an empty lot adjacent to a sidewalk to create pause and play space



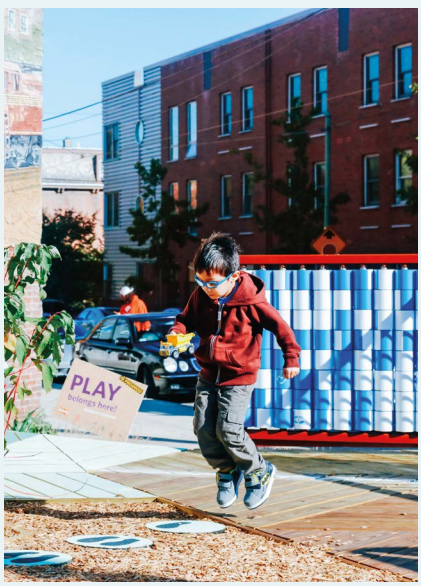



## KEYS TO SUCCESS

Community involvement is key to success. Urban Thinkscape emphasized engaging the local community and listening to stakeholders throughout the design and implementation process. Project advisory meetings included community members, local associations, local nonprofits, academic institutions, and public agencies such as transportation and planning departments.

Partnering with a strong community group, and finding a champion to advocate for the project, was critical.

The project team acknowledged gaps in their own expertise and brought in partners knowledgeable in these areas.




## LESSONS LEARNED

Maintenance is an ongoing challenge due to funding required for these activities.

## IMPACT

Increased pride of local community (residents and local business)

Increased overall interactions between parents and children

Increased time spent on the site

Increased use of language by children inspired by the physical space

CASE STUDY

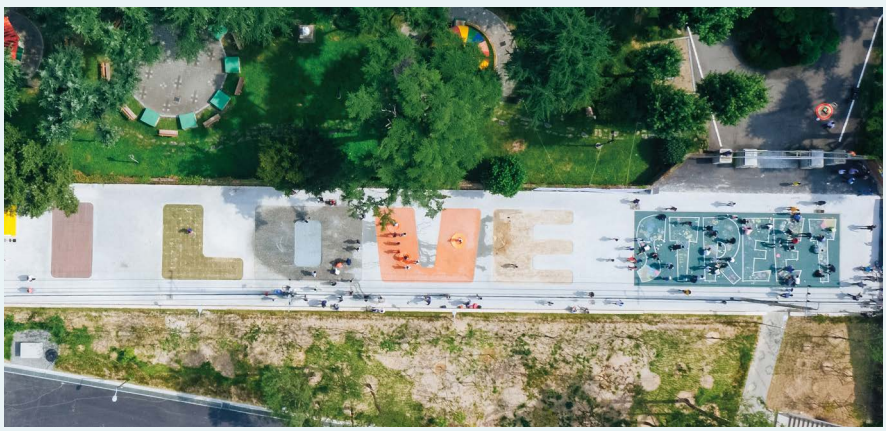


# I Love Street

**Location:** Gwangju, South Korea

**Implementing organization(s):** Gwangju Biennale Foundation, MVRDV, Jeroen Kooijmans

**Timeline:** 2017





## OVERVIEW

The project is part of the Gwangju Folly initiative, which consists of small interventions in urban public spaces. These follies are playful, artistic, and sometimes temporary interventions that can help communities recognize and unveil local issues. The I Love folly was designed by architecture firm MVRDV in collaboration with students of Seosuk Elementary School. It is a permanent intervention on a street closed to car traffic.

The intervention uses various paving and surface materials to encourage different uses such as playing, sitting, and jumping. The words "I LOVE" are formed by textures applied to the ground. There is a blank chalkboard space after these words that can be used for additional words or drawings. The project also includes water sprayers and a 5-m-high platform with seating and a table.



## KEY STRATEGIES

**Activate:** Added playful and interactive elements such as a chalkboard and water features

## STREET DESIGN ELEMENTS

**Pause and play spaces:** Created a large, street-sized play space

**Play and learning:** Incorporated textures, lighting, and interactive elements to encourage kinesthetic, physical, visual, and social learning

**Seating:** Installed formal and informal seating





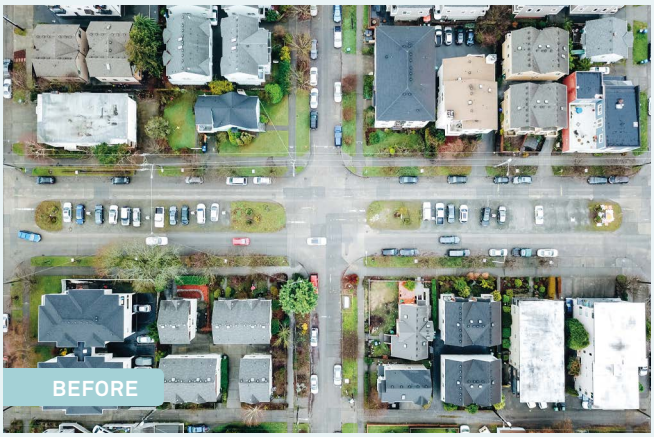


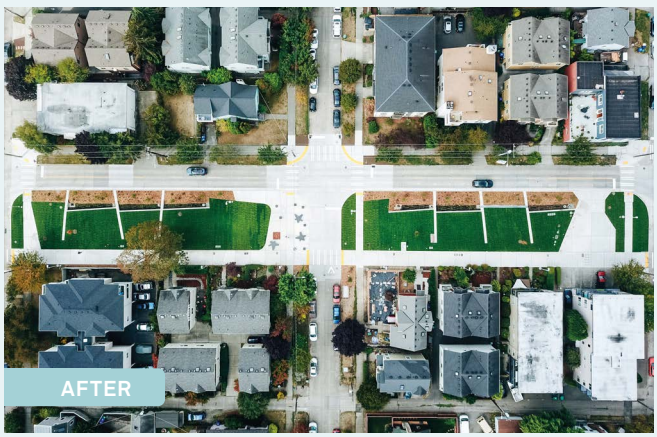
# Gemenskap Park

**Location:** Seattle, USA

**Implementing organization(s):** City of Seattle, Mithun Architects

**Timeline:** 2012-2018




## OVERVIEW

Two blocks of 14th Avenue Northwest were transformed into a linear park. “Gemenskap” is the Swedish word for “community,” and Gemenskap Park is located in a Seattle neighborhood with Swedish roots. Local residents initially conceived of the idea for a park on their street.

Before the park’s construction, a parking median ran down the center of the street. Parking was removed, and the median space was merged with the sidewalk on one side of the street to create space for the 16-m-wide park. The remaining travel lanes still allow for two-way vehicular traffic.

The redesigned street and park include a raised speed table plaza, flexible lawn mounds, a multi-use path, and seating. Existing trees were preserved. Innovative stormwater infrastructure captures and filters street runoff from each block and will support increased access to nature as the neighborhood continues to develop.





## STRATEGIES

**Reclaim:** Removed travel lanes to create a linear park, tightened corner radii

**Activate:** Added landscaping to the new linear park, programmed space with events

## KEYS TO SUCCESS

Community meetings, structured to encourage small-group conversations, were held throughout the design process. These helped align local residents on the park’s design and alleviate concerns about reducing parking.





Medellín, Colombia

# 4 Transforming Streets

Cities are re-imagining streets of every size, in every neighborhood, transforming them into places meant for people of all ages. In these street redesign projects, design strategies are applied to existing streets to change how they work—not just how they look. This chapter covers different types of streets used by children and caregivers, including streets near schools and other facilities for children, and shows several ways in which these streets can be redesigned. The transformations discussed here show powerful ways to make streets safer, more comfortable, and more joyful for children, caregivers, and others.

It is critical to improve existing streets, but this redesign guidance can also be used to guide new street designs from the beginning. Design solutions can be tested through pilot projects or interim interventions before investing in capital construction.

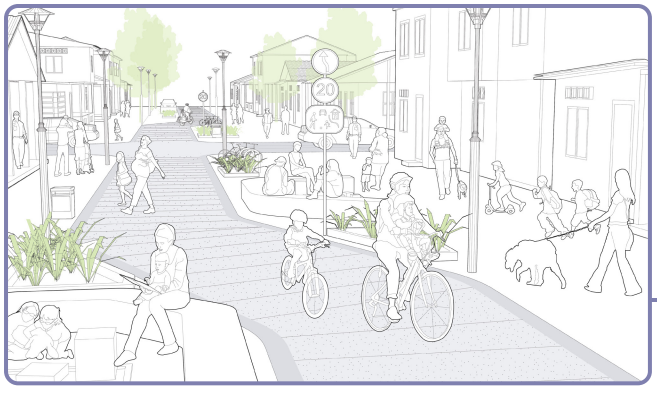
# 4.0 | Different Street Types in the City

Kids use a wide variety of streets in their daily journeys, in every part of a city—not just residential areas and schools. A connected network of safe and enjoyable streets is critical for a child-friendly city. Depending on a street's size, use, vehicular volume and speed, and building density, different combinations of strategies can be applied. Importantly, there are ways to integrate unstructured, unscheduled play and learning; to ensure safety; and to encourage users to find moments of joy and beauty on all types of streets.

## 4.1 | STREETS NEAR KEY DESTINATIONS

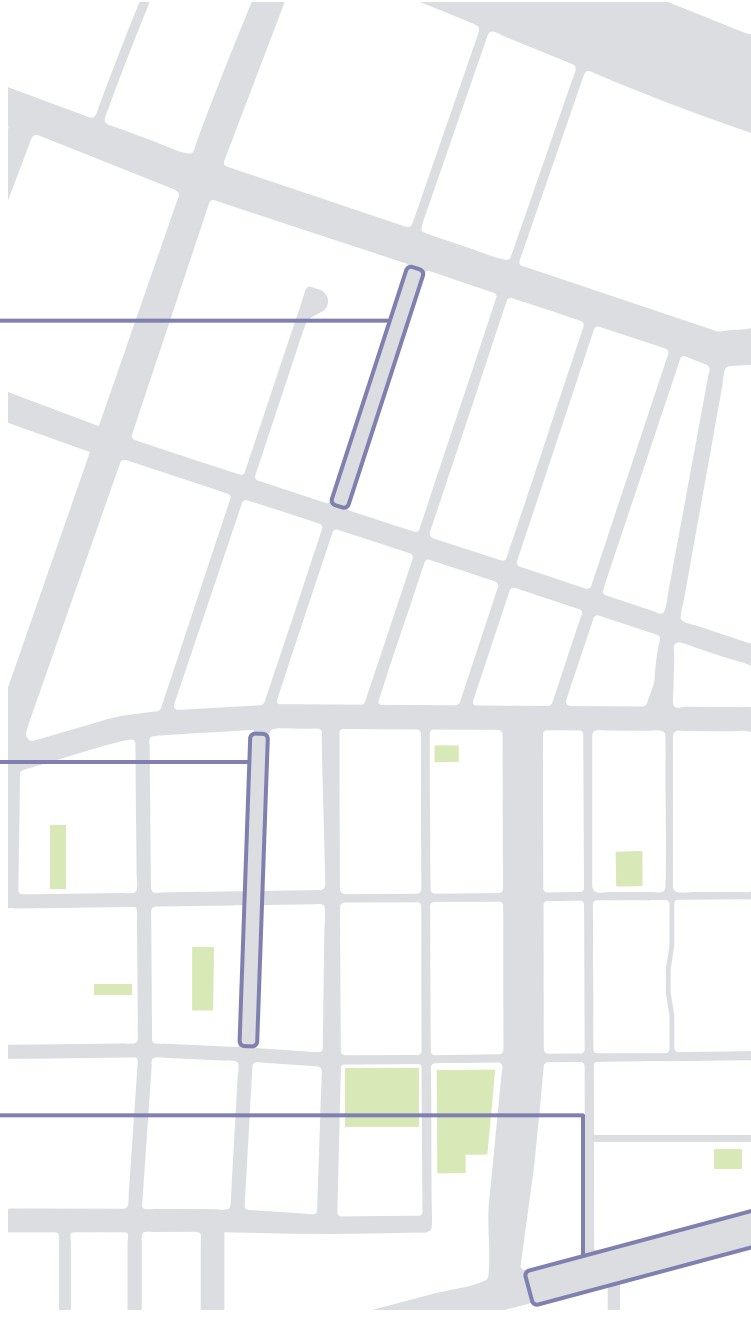


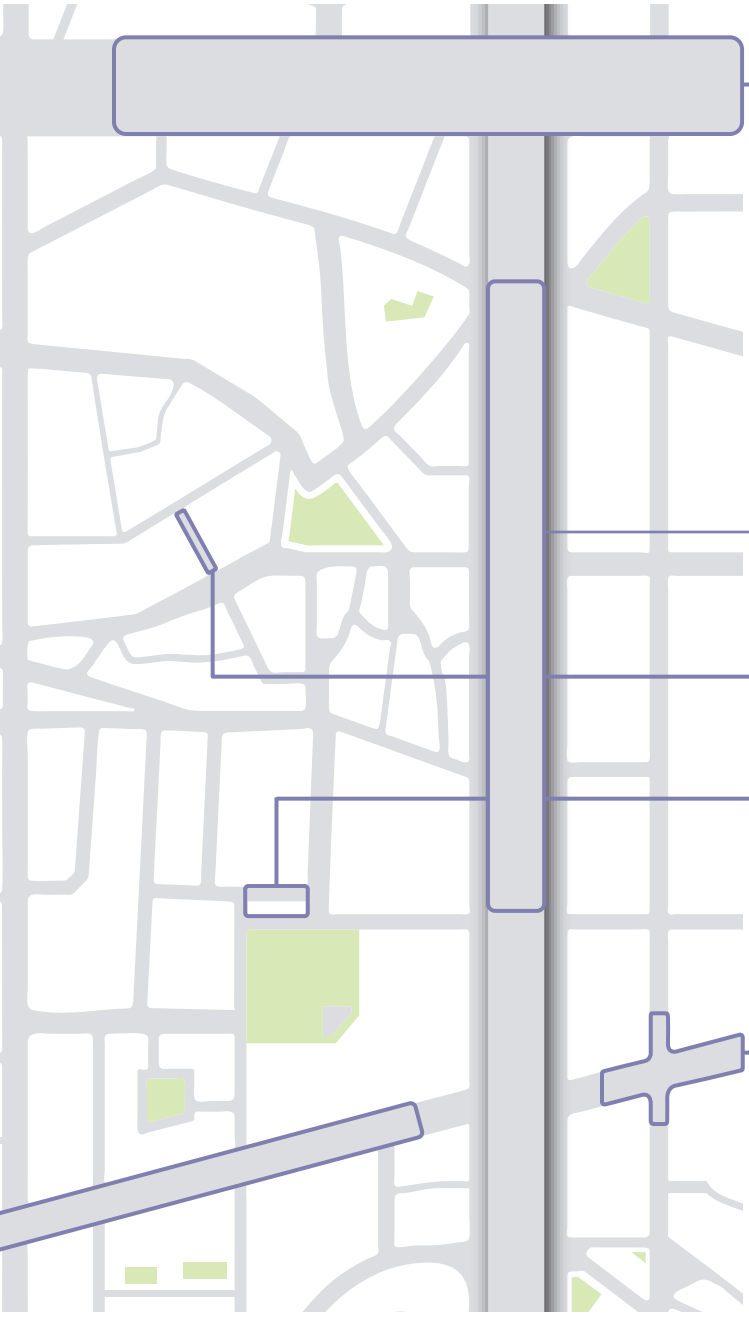
## 4.2 | NEIGHBORHOOD STREETS



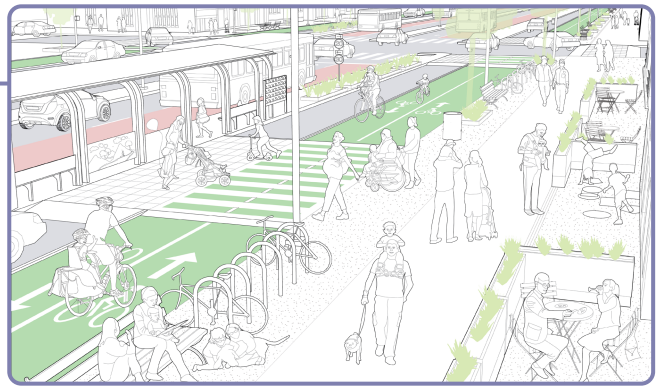
## 4.3 | COMMERCIAL AND MIXED-USE STREETS







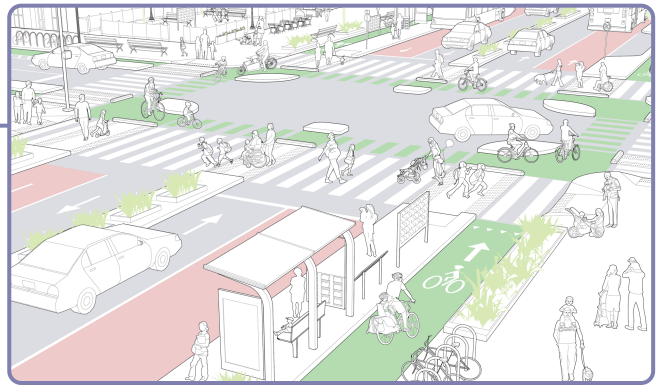
### 4.4 | THOROUGHFARES



### 4.5 | SPECIAL CONDITIONS



### 4.6 | INTERSECTIONS



# 4.1 Streets Near Key Destinations

Streets near services such as schools, daycares, playgrounds, libraries, and hospitals are high priorities for child-friendly street design. These services are at the center of families' lives, and so are the streets and public spaces around them. They have challenges distinct from other streets, including limited space, high curbside volumes from dropping kids off, and a lack of traffic calming. These streets can be busier during certain times of day, such as school drop-off and pick-up hours. They should be seen and planned as extensions of the services they support, and should be as safe, playable, and educational as the facilities themselves. These locations are ideal places to start transforming streets, and should be priority locations for street transformation.



Lusaka, Zambia



# 4.1.1 | Streets near Key Destinations



Toronto, Canada

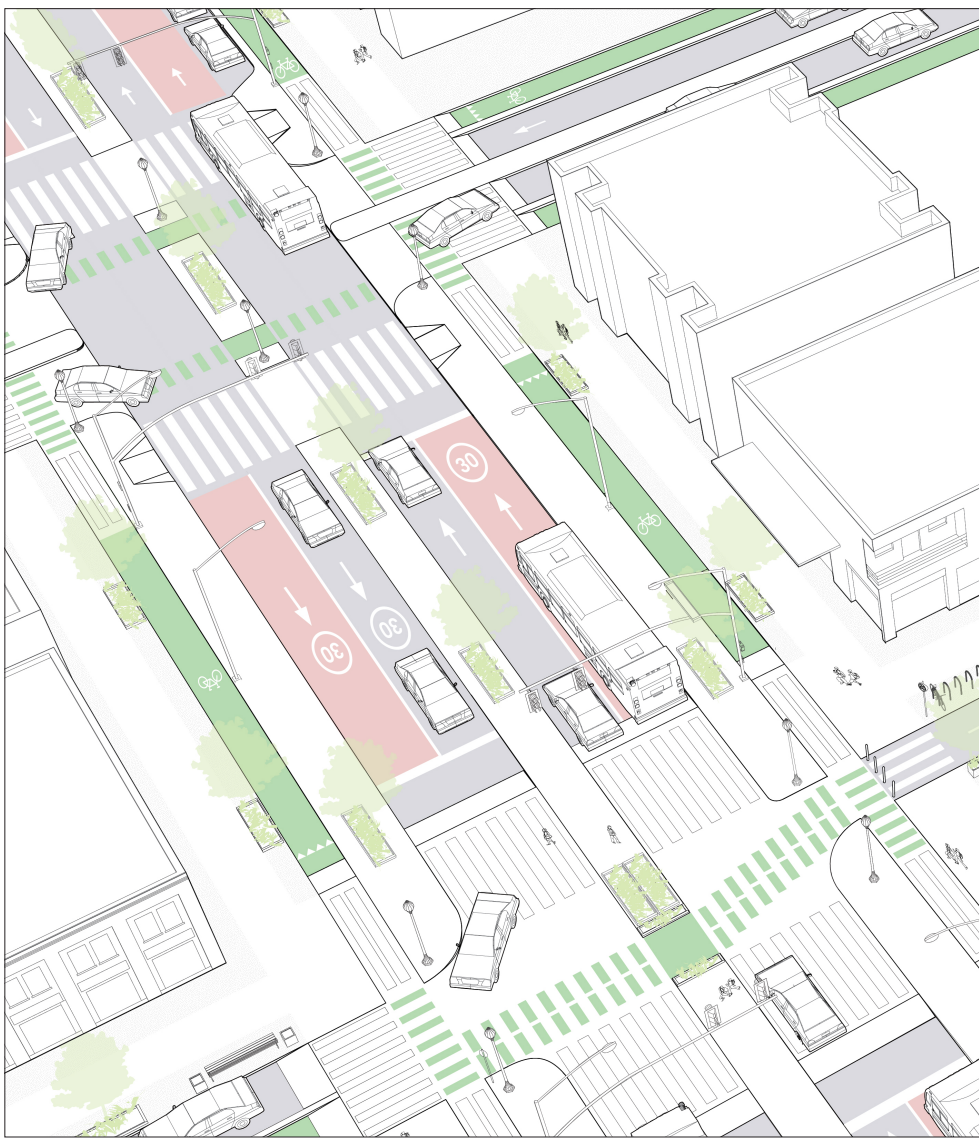


São Paulo, Brazil


Milan, Italy

## Design approach

A network approach to streets near key destinations is important: here, both the street in front of the school and the adjacent streets provide a safer overall environment. Streets along school entrances should aim for zero vehicle-pedestrian conflicts; be spaces for pausing, waiting, socializing, and playing; and extend the area for children into the street. The design of adjacent streets can support these goals by limiting vehicular access to school streets. These streets should limit or prevent vehicles from entering during certain hours by having a designated drop-off and pick-up zone on adjacent streets while allowing for access by emergency vehicles. Adjacent streets should promote access to school streets by transit, bicycle, and walking. Prioritize improving intersections by schools and other destinations for families walking and cycling to these facilities. *For more detail, see page 61.*





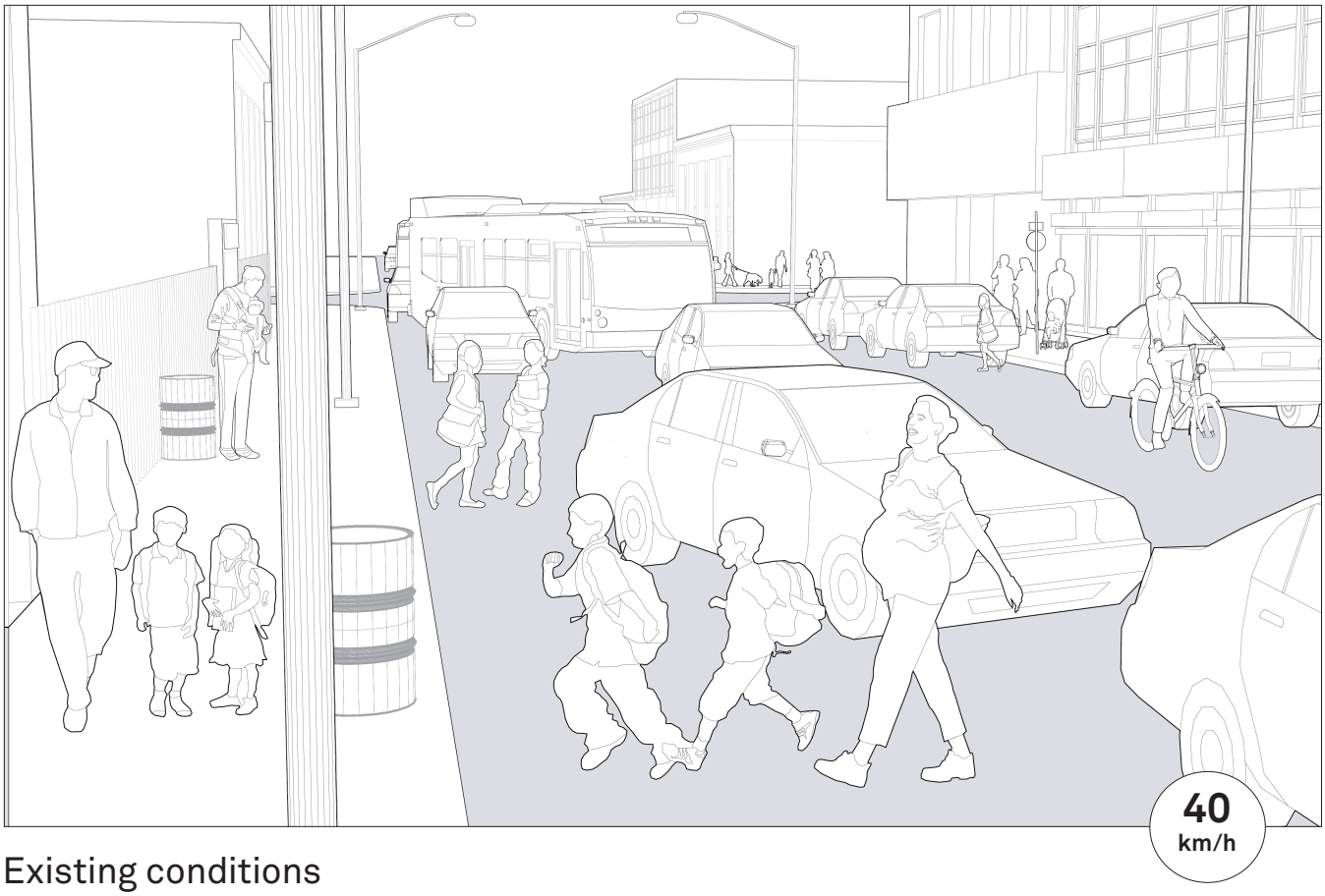
Abidjan, Côte d'Ivoire


Kolkata, India


Bogotá, Colombia



# 4.1.2 | **Streets near Key Destinations**




## Existing conditions

This example shows a two-way street in front of a school. It is very busy during drop-off and pick-up hours. Students meet, play, or wait for caregivers on the sidewalk.

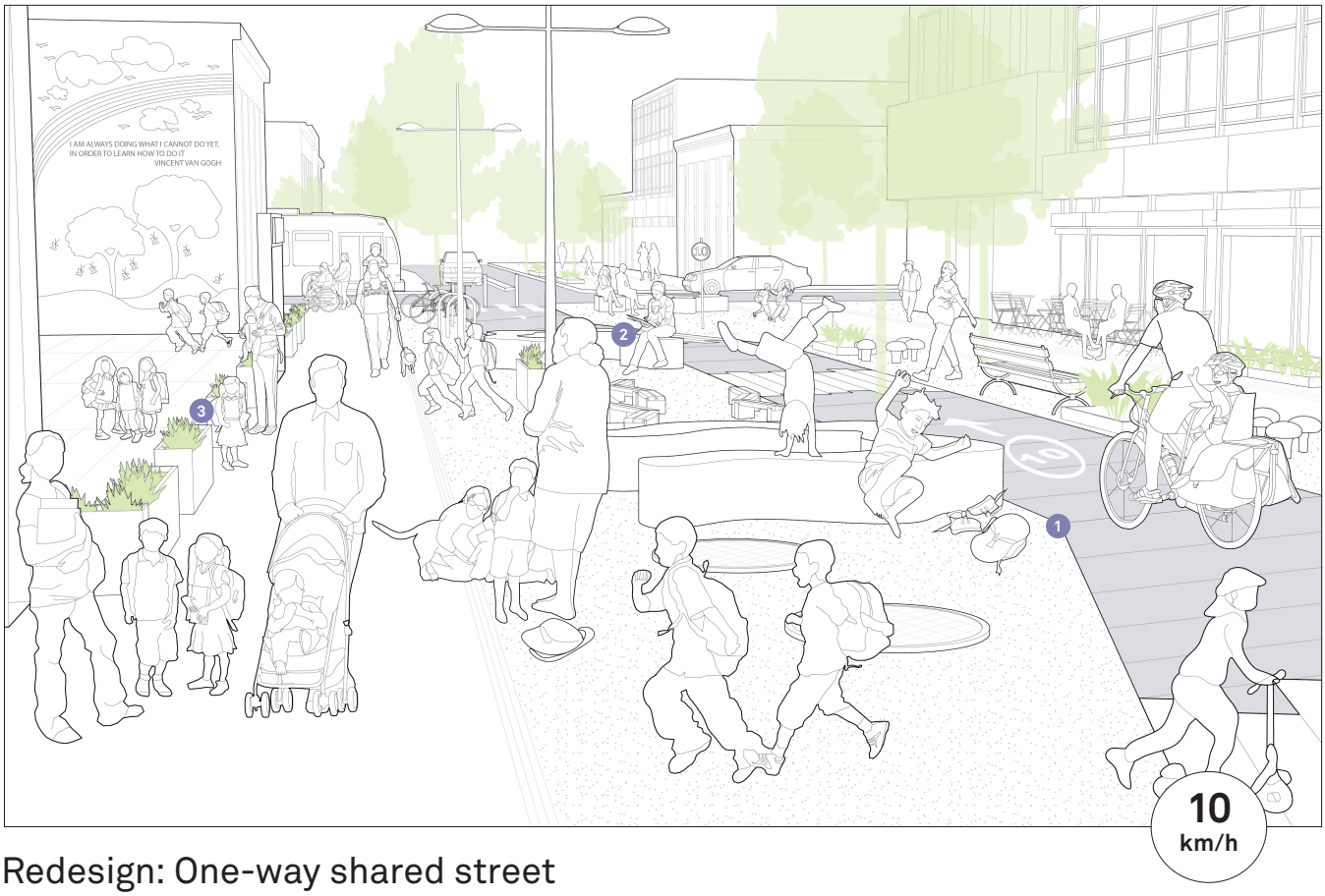
Sidewalk widths are not sufficient to accommodate the high volume of pedestrian activity during peak periods, which has a greater impact on those who walk from home or a transit stop. There are frequent obstacles in the clear path. As a result, kids and caregivers are often forced to walk on the road bed.

The street lacks pedestrian crossings aligned with school entrances and transit stops. Longer crossing distances and lack of traffic lights lead students and caregivers to cross the street amidst moving traffic.

The transit stop is placed on a narrow sidewalk and cannot accommodate all children and caregivers waiting for transit during pick-up hours.

This street has many vehicles, including school buses, private vehicles, and carpool vans, competing for drop-off space at the curb. This results in vehicles stopping in moving lanes and prohibited areas or double-parking, creating conflicts with other motorists and street users. There is no cycle parking for caregivers who drop children off at school by bicycle.

Fences and blank walls around the school create uninteresting, inactive, and opaque facades.




# Redesign: One-way shared street

## PROTECT

The street has been redesigned for speed limits of **10 km/h** and posted speed limit signs have been updated. Outside of designated school zones, streets have been designed for speed limits of **30 km/h**.

On this street and on adjacent streets and intersections, adding vertical deflection like raised crossings and speed tables reduces speeds and facilitates easy crossings for children and caregivers.

Motorists can recognize that they are driving through a slow-speed zone by distinctive paving materials and colors and the use of bollards, street furniture, and trees. The curb has been eliminated. Other options include raising the road bed in front of the school and/or delineating a narrow travel lane with a chicane by using pavers and furniture.

Signage has been added for "school zone" or "slow zone."

## RECLAIM

1 This street has been transformed into a shared street that is closed to vehicles during drop-off and pick-up hours. Reducing vehicular travel lanes creates extra space for pedestrians and cyclists, including dedicated play space in the shared street. This accommodates students entering and exiting the school and students waiting for caregivers.

Emergency vehicles are able to enter the shared space when necessary.

## ACTIVATE

2 Seating and trees have been added to the street immediately outside the school, creating places to pause and play. This includes spaces that are shaded and surrounded by landscaping.

Fun and educational elements have been incorporated where possible: colorful pedestrian crossings, educational messages on walls, and textures and colors on paving.

## EXTEND

3 Fences and walls have been removed, allowing play areas and other open spaces to be used by the community after school hours and on weekends.

Artwork has been added to adjacent blank facades.

## UPGRADE

Improved lighting increases safety for students who have early-morning or late-night school shifts.

Cycle racks have been installed and cycle-share stations have been added near schools.

CASE STUDY



# Justin Kabwe Primary School

**Location:** Lusaka, Zambia

**Implementing organization(s):** Amend, Child Health Initiative, Zambia Road Safety Trust, FedEx

**Timeline:** May-November 2017







## OVERVIEW

In a single year, four children were injured by road traffic outside Justin Kabwe Primary School in Lusaka. As part of Amend's School Area Road Safety Assessments and Improvements (SARSAI) program, the school area was transformed to improve safety for children, caregivers, and school staff.

The street used by Justin Kabwe Primary School students had no designated area for pedestrians. Therefore, building sidewalks and a raised pedestrian crossing was an important part of the street improvement project. Other safety upgrades included installing signage and building a pedestrian gate to guide students to the new crossing. Additionally, the project included a road safety education program with both classroom and practical, on-the-ground sessions.

SARSAI has also transformed school areas in nine other African cities by identifying schools where children are at high risk, assessing sites, and implementing infrastructure improvements. During each project, teams collect data on the physical space, modal shifts (especially mapping how children commute), road user behavior, and vehicular speeds. The evidence collected and analyzed helps to identify strategies and elements to improve safety. After implementation, additional data is collected to support monitoring and evaluation of the transformation.

The project's opening event involved children, teachers, government officials, and media, and it was used as an opportunity to communicate the importance of infrastructure improvements.

AFTER

**56%**

**reduction in 85th percentile average vehicle speed**
(from 32 km/h to 14 km/h)

## STRATEGIES

**Upgrade:** Added paved sidewalks and raised pedestrian crossings

**Protect:** Raised pedestrian crossings, installed bollards along sidewalk, installed rumble strips on road bed near pedestrian crossings

**Extend:** Repainted school walls near street improvements with educational murals

## IMPACT

Estimated 26% reduction in serious injuries to children

## KEYS TO SUCCESS

The SARSAI program has a clear and comprehensive process that includes phases for assessing, designing, implementing, and monitoring. Projects within the program are strengthened due to lessons and experience from other implementations.

Various stakeholders were engaged early on, increasing their sense of long-term ownership. School children who had been involved in road traffic crashes were invited to share their stories, with the help of a guardian. The local community was asked for its opinions on safety issues and how these could be improved. Government officials were also involved in early stages, before specific sites were selected.





# Tove Ditlevsens Plads

**Location:** Copenhagen, Denmark

**Implementing organization(s):** City of Copenhagen, Supertanker, Tove Ditlevsens School

**Timeline:** 2012-2015




## OVERVIEW

Tove Ditlevsens Plads, a small plaza in front of Tove Ditlevsens School, was transformed as part of the Regional Renewal Central Vesterbro plan. The schoolyard was once separated from the streets and the plaza by a fence, but the fence was removed and the public space expanded by incorporating streets adjacent to the school.

Play space was added to this newly expanded plaza, including trampolines, hammocks, and skateboard ramps. The street was repaved with cobblestones, and benches with integrated cycle parking were added.

Green lines painted on the ground create fun games and math equations, and they remind children and caregivers about the poetry of local writer and school namesake Tove Ditlevsen.

Engagement was an important part of the design process. Schoolchildren, local residents, representatives from a nearby church, and members of the local business community were engaged through a working group that discussed both design and programming.





## STRATEGIES

**Upgrade:** Repaved sidewalks, painted crosswalks

**Reclaim:** Removed parking spaces, created a shared street by removing the curb and changing paving materials

**Activate:** Installed play structures and street furniture

**Extend:** Removed fences around school property to extend the public realm into the schoolyard and nearby setbacks

## STREET DESIGN ELEMENTS

**Pause and play spaces:** Created space for playing by adding numerous play elements

**Seating:** Installed street furniture and varied seating options

CASE STUDY



# Albert Sabin Children's Hospital

**Location:** Fortaleza, Brazil

**Implementing organization(s):** City of Fortaleza, World Resources Institute, NACTO-GDCI

**Timeline:** 2017







## OVERVIEW

Albert Sabin Children's Hospital is a major public pediatric facility serving hundreds of young patients every day. The majority of them arrive on foot from a nearby bus stop, but the street that gives access to the hospital, Tertuliano Sales, prioritized motor vehicle movement. Sidewalks in the area were extremely narrow and in poor condition, which forced half of the children going to and from the hospital, many with disabilities, to walk or be carried on the road bed—an unsafe condition.

The hospital identified this pressing issue and wanted to develop strategies to improve road safety, aiming to drastically change the street configuration to prioritize pedestrians. More than 1,000 $m^2$ of underutilized road space was repurposed and converted into continuous and accessible sidewalks. Traffic-calming measures such as curb extensions, raised crosswalks, speed bumps, narrower travel lanes, and tighter turning radii encourage drivers to practice safer speeds.

This intervention is part of the recent efforts by the city to improve road safety conditions, which also include enforcement, urban redesign, mass media campaigns, and improved data collection and analysis. Because of these actions, the number of traffic-related fatalities dropped by 40% citywide between 2011 and 2019.




## STRATEGIES

**Upgrade:** Painted crosswalks, widened sidewalks, and added pedestrian ramps

**Protect:** Added curb extensions to reduce crossing distances, added speed humps, added raised pedestrian crossing

**Activate:** Created waiting spaces on sidewalks, reorganized local street vendors

BEFORE

**2%**
**of people surveyed felt "very safe" crossing Tertuliano Sales Street**

AFTER

**88%**
**of people surveyed felt "very safe" crossing Tertuliano Sales Street**

AFTER

**42%**
**reduction in average vehicle speed**









## STREET DESIGN ELEMENTS

**Seating:** Installed street furniture

**Nature and landscaping:** Planted trees on new sidewalks

## IMPACT

Pedestrians walking on the road bed dropped by 86% (from 40% of pedestrians to 6%).

No children were observed walking or being carried on the road bed near the facility after project implementation, compared to 50% before.

Crossing distances were reduced by up to 67% (from 10.5 m to 3.5 m).

1,175 $m^2$ of underutilized road space was repurposed, an increase of 79.4%.

Space allocated for pedestrians in Rua Tertuliano Sales's right-of-way increased from 31% to 56%.

Increased visibility of pedestrians and reduced risk of crashes was achieved.

## KEYS TO SUCCESS

Aligning with key stakeholders, including the hospital and the mobility agency's signals team

Developing and monitoring on-site geometry trial with traffic cones before implementation

# 4.2 Neighborhood Streets

Neighborhood streets are our front yards. They are at the core of people's relationship with their communities and cities because they offer the first contact with the public realm during everyday journeys. These streets span from narrow and quiet with small houses to wide streets lined with high-rise, high-density buildings. They function as extensions of home, hosting family activities like playing and socializing. If they encourage people to linger, these streets can help build relationships and strengthen communities. They become even more important when neighborhoods lack safe or attractive open spaces, or for caregivers with young children, who may take shorter trips to stay closer to home.



Havana, Cuba



# 4.2.1 | **Neighborhood Streets**



Copenhagen, Denmark


Accra, Ghana


New Delhi, India

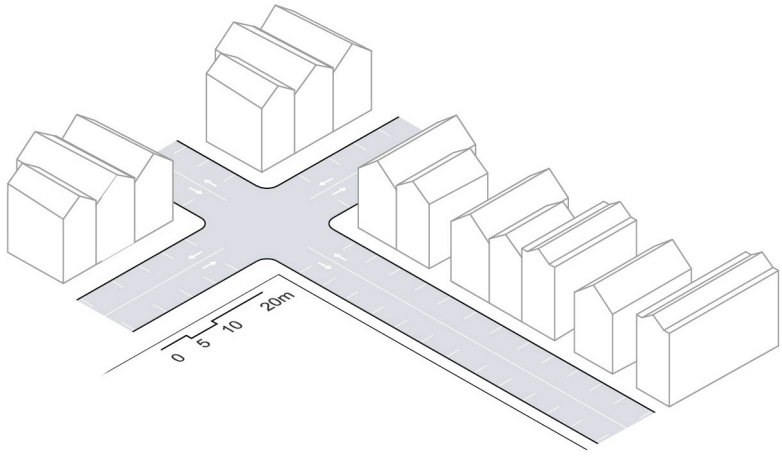

New York City, USA


São Paulo, Brazil


Delft, Netherlands

## Existing conditions

This example shows a narrow residential street with a total right-of-way of 12 m. It has low vehicular traffic, but most of the space is dedicated to a two-way travel lane and parked cars. Sidewalks are very narrow (0.5 m) and sometimes missing. *For more detail, see page 70.*




road bed

sidewalk

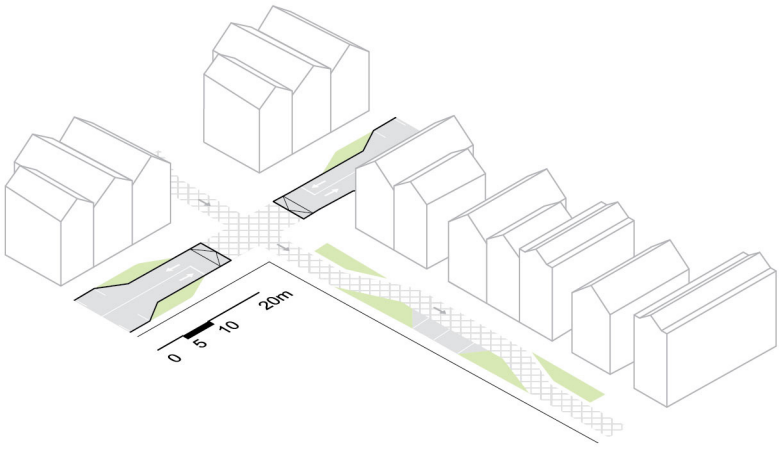
pedestrian-priority shared street

landscaping

# Redesign ideas

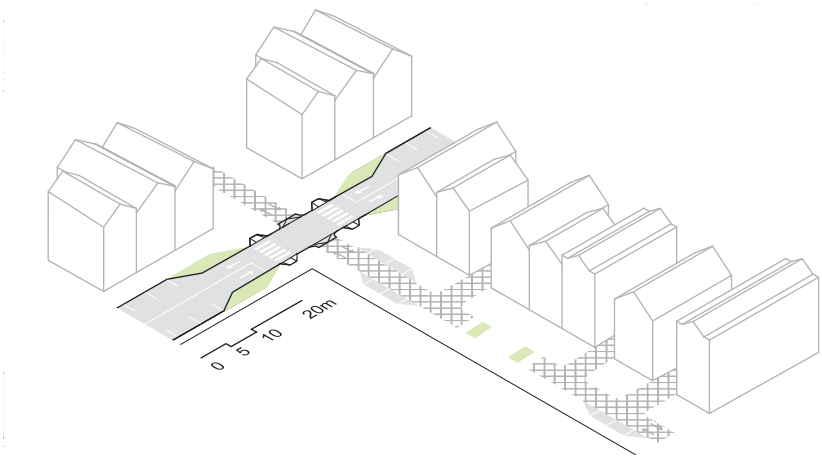
## ONE-WAY SHARED STREET

Reroute vehicular traffic in the neighborhood to reduce traffic volumes and create a one-way shared street. Create horizontal deflection to reduce speeds by strategically designating areas for limited parking and green infrastructure. Remove the curb to create a feeling of shared space. Install street furniture that allows local families to appropriate the shared space as their front yards. *For more detail, see page 71.*



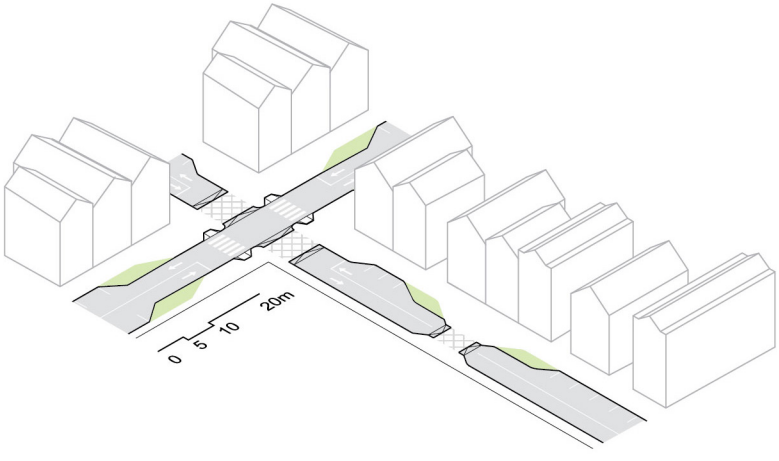

## PEDESTRIAN-PRIORITY STREET

Remove vehicular through-traffic and on-street parking to create a pedestrian-priority street with limited vehicular and driveway access. Install playable elements and street furniture that allow the street to be used as a front yard for play, rest, socializing, and more. Maintain a permeable network for pedestrians and cyclists.

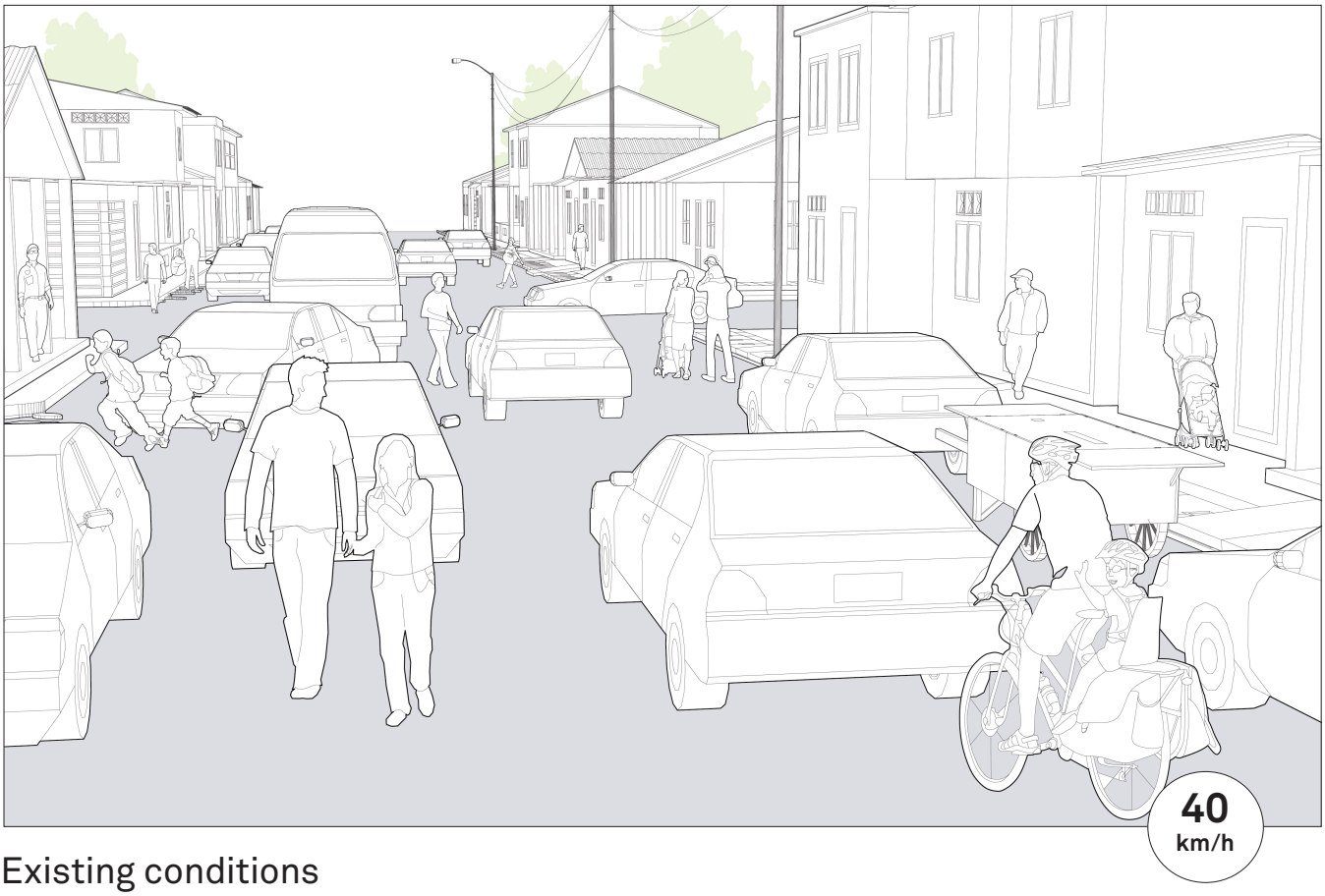



## TWO-WAY STREET WITH PARKING

Maintain two-way vehicular traffic. Remove parking from one side of the street and widen sidewalks to create accessible and continuous clear paths. Implement restricted access, curb extensions, pinch points, and raised crossings to reduce speeds, shorten crossing distances, and provide space for green infrastructure, trees, and seating.



# 4.2.2 | **Neighborhood Streets** (12 m)




## Existing conditions

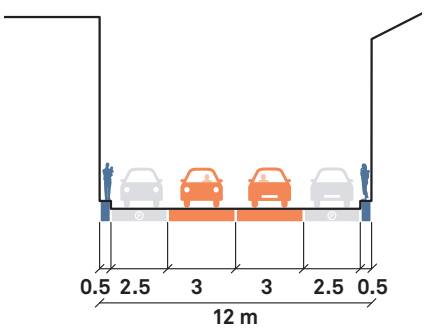
This example shows a residential street with a narrow right-of-way.

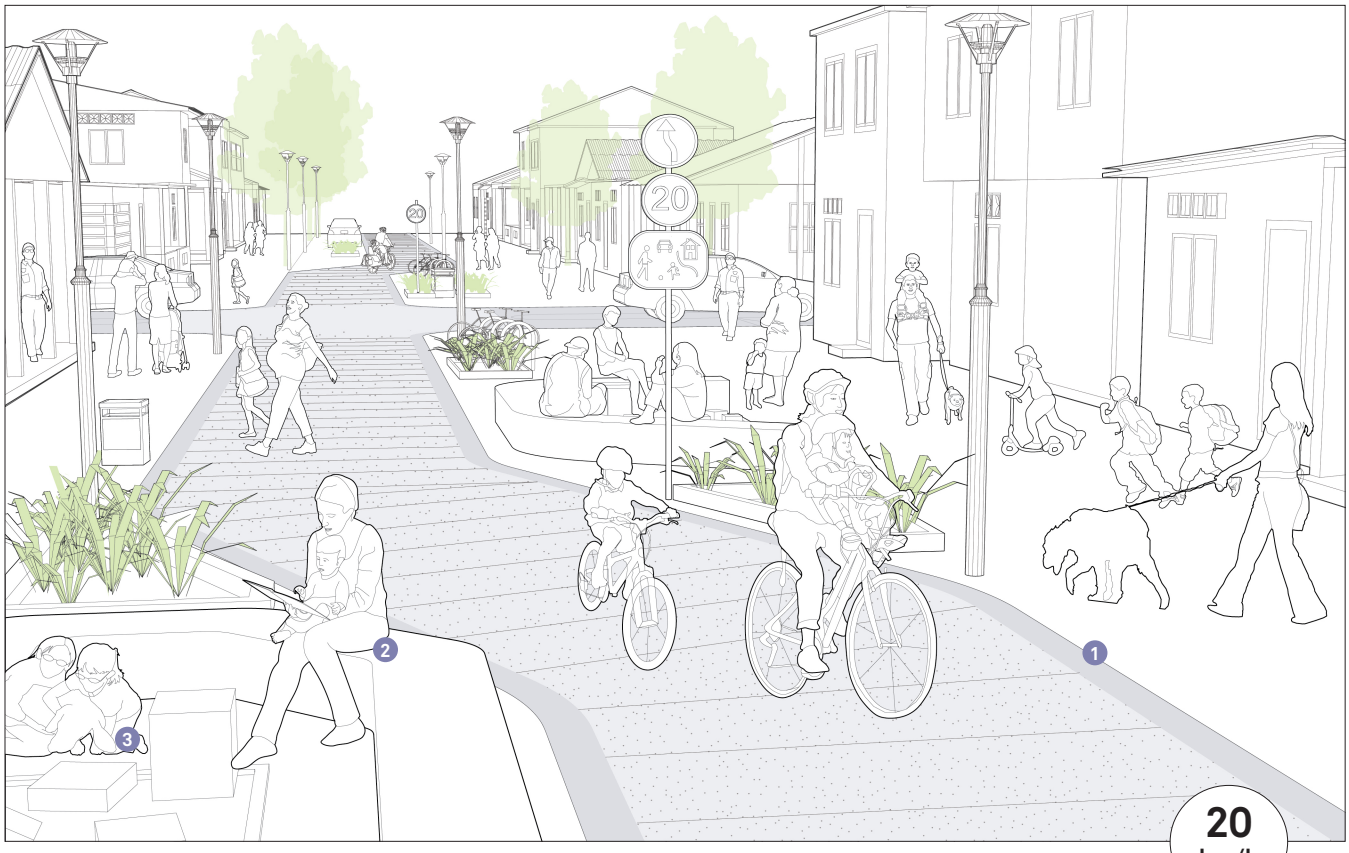
Like many streets in this context, this street lacks markings, signals, pedestrian crossings, or other designated spaces for pedestrians.

Despite low vehicular traffic, most of the space is dedicated to motor vehicles and parking.

Sidewalks are narrow, missing, or poorly maintained, making pedestrian movement difficult and unsafe, especially for caregivers pushing strollers or carrying toddlers and for other people with limited mobility.

Existing utilities such as light and electricity poles, water and sewage channels, trash cans, and other items create frequent obstacles. As a result, this street functions as a de facto shared street where pedestrians, cyclists, and motorists informally share the road bed.





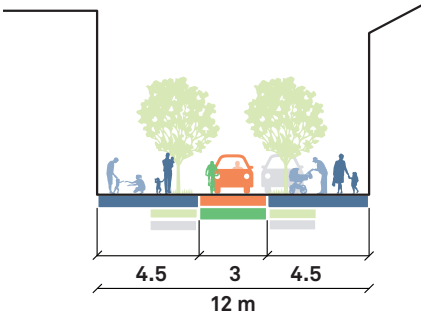

## Redesign: One-way shared street

### RECLAIM

Vehicular traffic has been rerouted, reclaiming space for pedestrian activity and creating a one-way shared street. This street allows contraflow access for bicycles.

### PROTECT

Shared travel lanes must be narrow: **3 m**, with **0.5 m** for egress on either side. Horizontal deflection, such as chicanes, slows speeds. Designated spaces for car, motorcycle, and cycle parking have been created along the street edge and also act as horizontal deflection.




1 The travel lane has been made flush to meet the curb and uses surface materials other than typical road asphalt to signify a shared space. Street users visually recognize when they are entering or leaving this zone through the use of gateways, changes to grade and paving, tactile surfaces, and vertical elements like bollards.

Using signage such as “slow zone” and “children playing” reminds users of pedestrian priority.

### UPGRADE

2 Street furniture that invites families to walk and stay has been installed and lighting have been improved. Sidewalk zones have been organized to maintain a wide clear path of at least **1.8 m**.

### ACTIVATE

3 Spaces for structured and unstructured play have been incorporated, and seating has been strategically placed nearby for caregivers to watch children and meet each other.

CASE STUDY



# Potgieterstraat

**Location:** Amsterdam, Netherlands

**Implementing organization(s):** Municipality of Amsterdam, Carve Landscape Architecture

**Timeline:** Completed 2008





## OVERVIEW

Potgieterstraat is located in inner Amsterdam, in a 19th-century neighborhood built with narrow streets and few green and public spaces. A 60-m-long block of Potgieterstraat was transformed as part of a larger plan to upgrade public spaces in the district, which included creating child-friendly streets.

Potgieterstraat's 17-m right-of-way had included two travel lanes, parking, and a median. On one side of the street, one travel lane and one parking lane was combined with both the sidewalk and the existing median. The expanded sidewalk-median created a 1,500 $m^2$ surface, which became a new play space with fun and playful elements. A cycle lane was created on the other side of the street.

The design process included many challenges. The street redesign included removing four parking spaces, and conflicts arose when local residents were hesitant to lose these. The City Council demanded agreements from 70% of residents to accept the design, so the design firm sent questionnaires asking key questions about what residents wanted and would accept, and explained the rationale for the design. Other challenges arose from the appointment of a new political administration, which resulted in changes in plans previously approved. Despite these challenges, the process resulted in a more vibrant and connected neighborhood.

## STRATEGIES

**Reclaim:** Removed travel lanes and parking spaces to integrate existing median and sidewalk, creating a plaza with play space; restricted vehicular access

**Activate:** Added play elements and street furniture

## STREET DESIGN ELEMENTS

**Pause and play spaces:** Added landscaping; repaved plaza with rubber; installed play objects including a slide, crawling tunnel, spinners, trampolines, water sprayers, and whispering tubes

**Nature and landscaping:** Kept existing trees, planted additional trees

**Cycle infrastructure:** Added two-way cycle lane

## IMPACT

Increased usage by local residents

Increased sense of ownership

## KEYS TO SUCCESS

Engaging the community early in the design process

Explaining how the street redesign would enhance safety and enjoyment for local residents, which helped gain the necessary approval of 70% of residents to build the redesigned street





CASE STUDY

# Terraces Roy

**Location:** Montreal, Canada

**Implementing organization(s):** City of Montreal

**Timeline:** 2017-present

## OVERVIEW

In 2015, the City of Montreal created the Shared and Pedestrian-Only Streets Programme (Programme d'implantation de rues piétonnes et partagées, or PIRPP) to support boroughs in implementing street pedestrianization projects. In 2017, the Borough of Plateau-Mont-Royal started the Roy Street pedestrianization project between Colonial and Bullion Streets. On this block, the city redesigned the street to create a car-free environment, installing benches and planters for urban farming and creating play spaces for children. These elements are organized around four "islands" installed in the road bed as raised, colorful platforms that create unique areas to play and stay.

The project is viewed as an interim phase for a more permanent project to begin in 2020. The city monitors the use of the space and takes into account variation throughout the year to inform final project implementation.

A committee of local residents was created to ensure engagement of the community with city agencies responsible for the project. Goals of the project included encouraging walking through increasing public space for pedestrians, involving the community in the transformation of public spaces to encourage public support, and developing local knowledge of public space and street transformations.

The redesigned street is programmed with local street markets.

## STRATEGIES

**Reclaim:** Restricted vehicular access to create a pedestrian-only street

**Activate:** Added playful elements and street furniture



## STREET DESIGN ELEMENTS

**Sidewalk:** Maintained clear path for pedestrian movement among new play and seating structures

**Pause and play spaces:** Designated 4 "islands" for play and stay with decks, gardens, seating, and a sandbox

**Nature and landscaping:** Constructed planters with edible gardens

**Seating:** Installed 62 benches and seating spaces

## IMPACT

An average of 4,100 pedestrians use the space per day

Space for pedestrians increased from 34% of the right-of-way to 100%

85% of survey respondents said they visited the street more often



AFTER

**95%**

**of people surveyed are "satisfied" or "very satisfied" with the project**

# 4.3 Commercial and Mixed-Use Streets

Commercial streets around the world are a destination for families where they might run errands or access services on weekdays and shop or eat on weekends. Often, sidewalks are not wide enough to accommodate high volumes of pedestrian movement and commercial activity. Places to stop, rest, socialize, and wait might be limited due to competing needs from these streets.

Commercial streets can be filled with activity from retail, everyday services, street vendors, transit, and freight loading and unloading. Because they function as connectors within neighborhoods, these streets organize the daily routines of pedestrians, cyclists, transit users, and motorists. Commercial streets have the potential to enhance access to transit and cycling while adding high-quality public spaces to places that need them.



Copenhagen, Denmark


KIOSK
Spil her
zakabona

# 4.3.1 | Commercial and Mixed-Use Streets



Kuala Lumpur, Malaysia




Vienna, Austria



Bogotá, Colombia



Melbourne, Australia



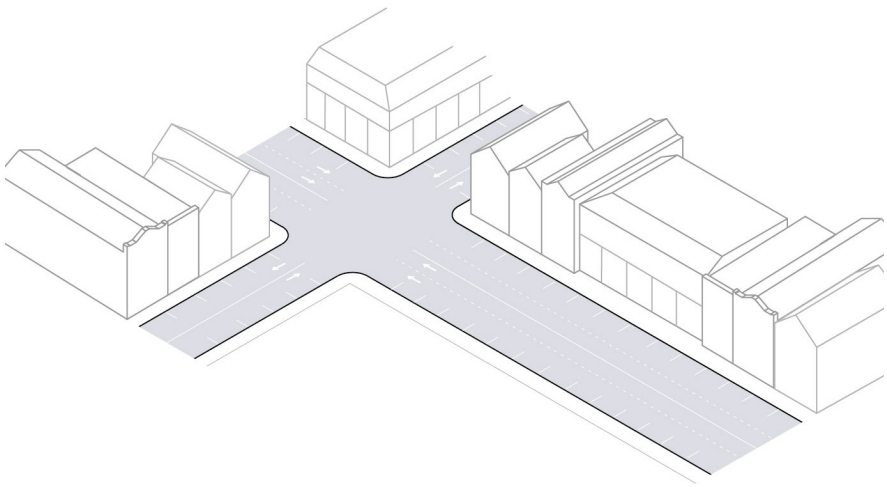
Chicago, USA



Ho Chi Minh City, Vietnam

## Existing conditions

This is a 24-m-wide, two-way commercial street with two travel lanes and one lane of parking in each direction. Its 2.5-m sidewalks are not wide enough to accommodate high pedestrian volumes, commercial activity, or other essential services. *For more detail, see page 78.*



road bed

sidewalk

pedestrian-priority shared street

transit-only lane

transit stop

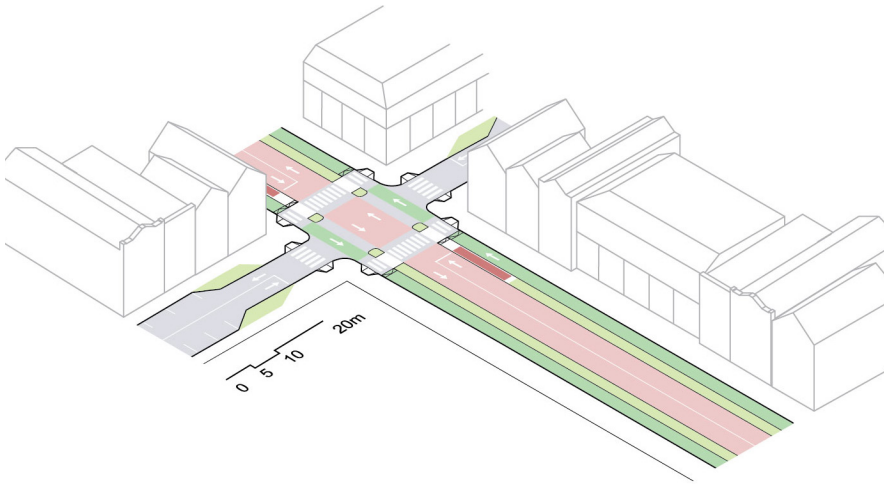
cycle facility

landscaping

# Redesign ideas

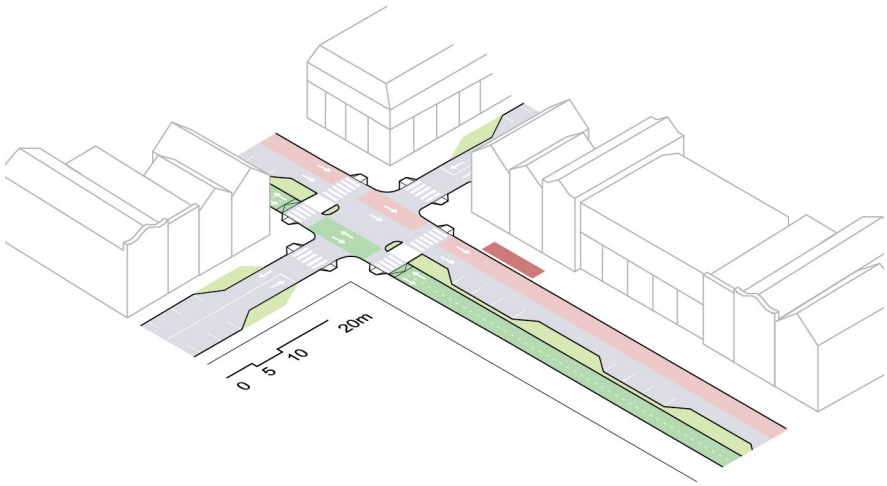
## PRIORITIZE TRANSIT AND CYCLING

Replace vehicular travel lanes with transit-only and protected cycle lanes to move more people using less space. Manage the local network to reroute existing vehicular traffic, allowing only limited access for taxis, accessibility vehicles, and loading during certain hours. Widen sidewalks to accommodate pedestrian activity. *For more detail, see page 79.*



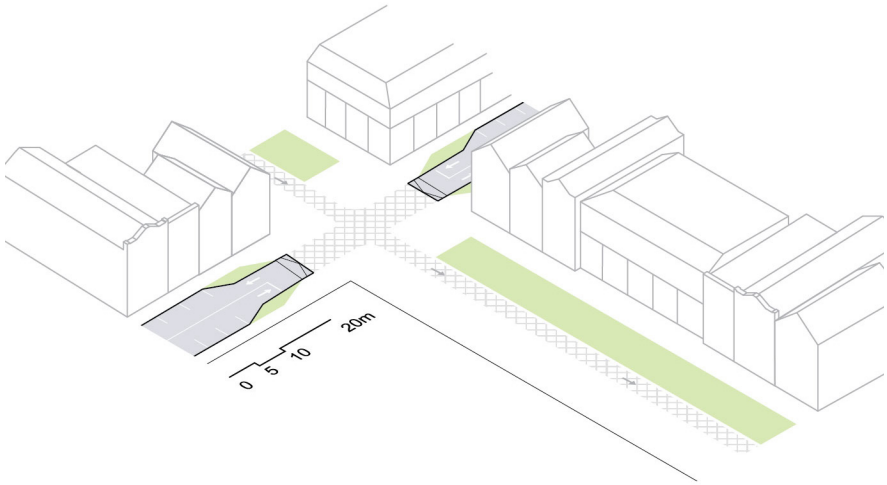

## CREATE A ONE-WAY STREET

Convert the street to a one-way street with a dedicated bus lane and parking-protected, bidirectional cycle lane. Maintain one travel lane. Add designated loading areas and extend sidewalks. Alternate parking spaces with refuge islands and green infrastructure. Make the curb flexible enough to accommodate various uses throughout the day or week. Consider regulating delivery times.

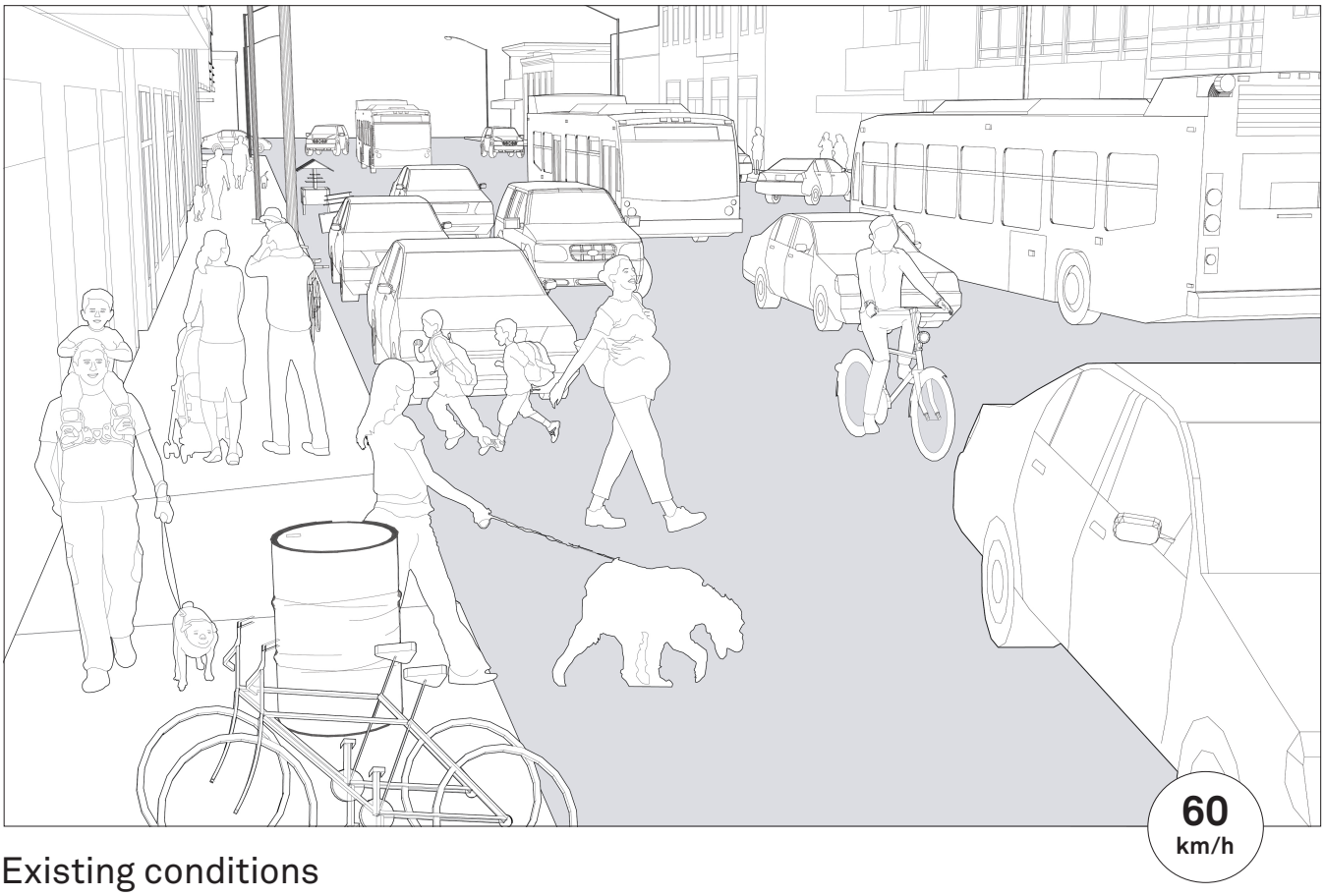



## CREATE A PEDESTRIAN-PRIORITY STREET

Manage the network to reroute vehicular traffic and create a pedestrian-priority street. Add frequent pause and play spaces, and allow businesses to spill out onto sidewalks. Allow cyclists to move through at slow speeds. Restrict loading for local businesses to limited hours and ensure a 3.5-m egress for emergency-vehicle access. Ensure transit and cycle options are available to access the pedestrian-priority street.



# 4.3.2 | **Commercial and Mixed-Use Streets** (24 m)




## Existing conditions

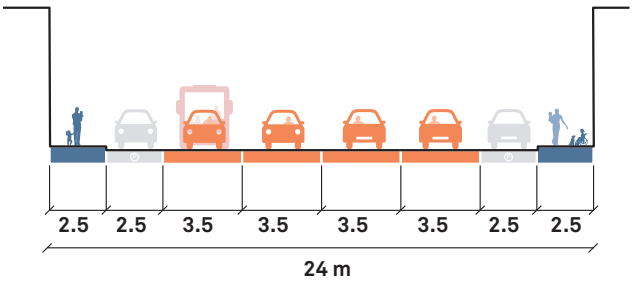
This example shows a busy, two-way, mixed-use street. It has a moderate-to-high volume of traffic and pedestrian activity that cannot be accommodated on existing sidewalks. The street has wide lanes, unmarked pedestrian crossings, and a lack of traffic lights.

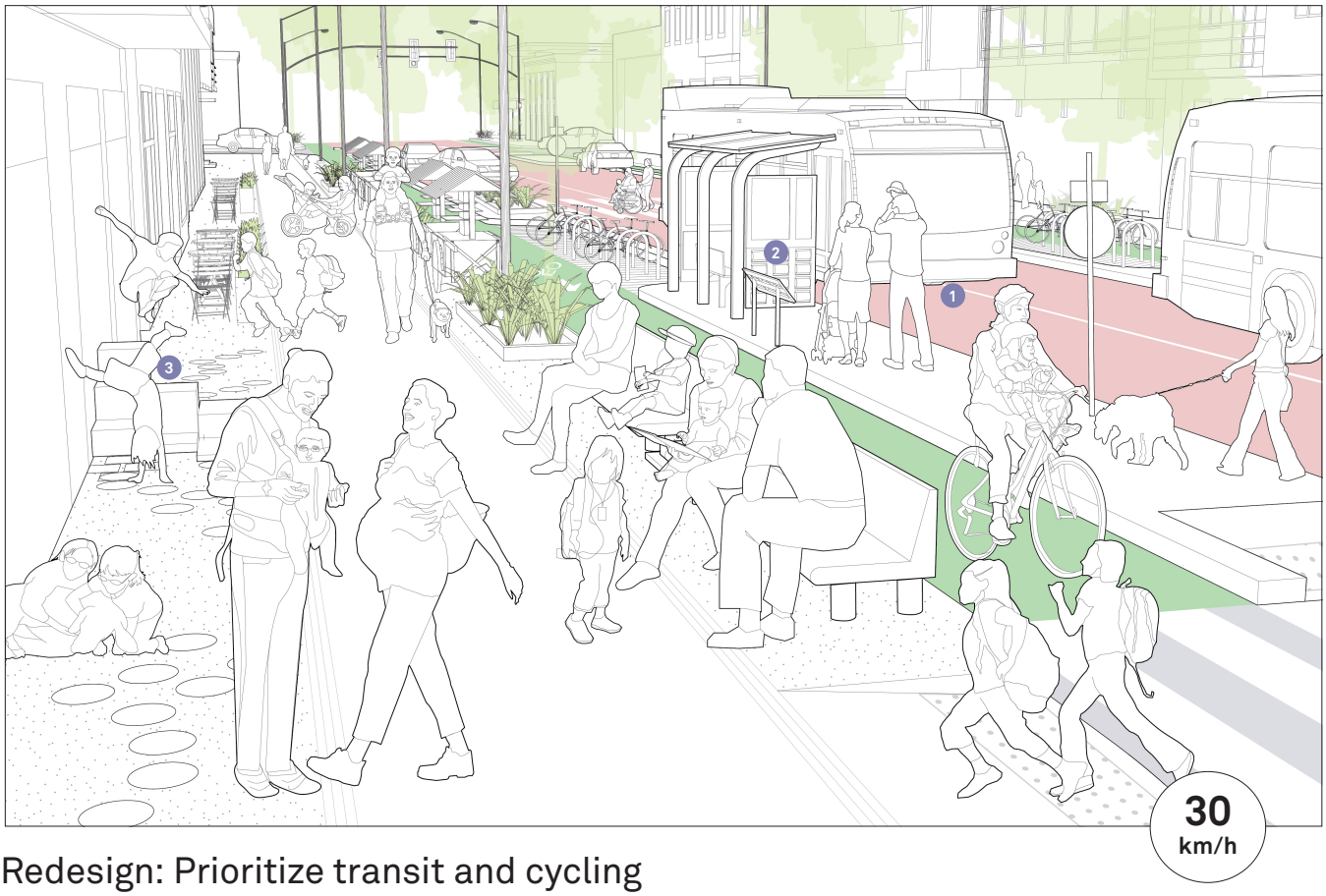
A lack of frequent pedestrian crossings prevents pedestrians from safely accessing the many destinations on both sides of the street.

Because of retail activity on the ground floor, the curbside is in high demand for loading and unloading, transit access, cycle parking, and vehicular parking. Often, vehicles encroach on sidewalks and moving lanes, blocking pedestrian clear paths and access to transit.

The street's design is not self-enforcing and requires additional resources to function smoothly, such as police presence to regulate car parking.

The street is noisy and crowded. It is uncomfortable, and although it functions as the core of everyday life, few people feel encouraged to stay there.






# Redesign: Prioritize transit and cycling

## RECLAIM

1 Vehicular travel lanes have been replaced with transit-only and cycle lanes to move more people using less space. Sidewalks have been widened from the reclaimed space. Taxis and limited vehicular access may be allowed on transit-only lanes.

Adding transit bulbs facilitates faster boarding, which reduces travel times for transit. Accessible drop-off zones have been added.

Designated space and time is provided for freight loading and unloading.

Parking demand has been managed by providing parking on surrounding streets and using parking pricing strategies.

## UPGRADE

Intersections have been upgraded by painting pedestrian crossings, and traffic signals have been installed. All crossings have longer pedestrian clearance times. Adding mid-block crossings, especially by transit stops or larger retail shops, helps users access the street's many destinations.

## PROTECT

Narrow travel lanes and frequent crossings make it uncomfortable for motorists to speed.

Refuge islands provide a safe space for pedestrians to wait while crossing the street.

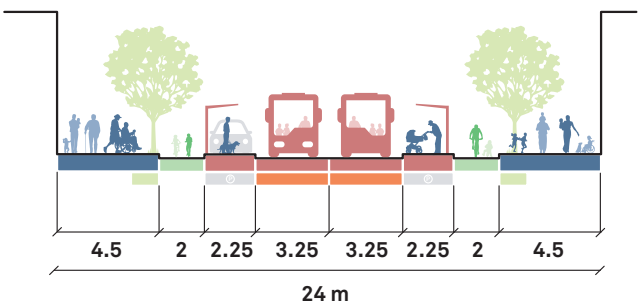
## ACTIVATE

Shaded spaces for pause and play have been added on each block while ensuring a wide clear path for pedestrian movement.

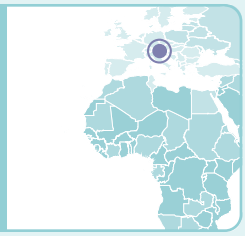
2 Transit stops have been improved by providing dedicated space on the side medians, adding shelter and providing play and interactive elements for children.

## EXTEND

3 Fun and educational elements have been added. Front setbacks and vacant lots may be used as additional public space.



CASE STUDY



# Slovenska Street

**Location:** Ljubljana, Slovenia

**Implementing organization(s):** Municipality of Ljubljana, Dekleva Gregoric Architects, Katusic Kocbek Architects, Sadar + Vuga, Scapelab

**Timeline:** 2012-2015







## OVERVIEW

Slovenska Street is the backbone of Ljubljana: an important north-south connection and the cultural and economic core of the city. In the 1960s, the street was widened and turned into a four-lane road, which soon proved to be an inefficient strategy to improve mobility.

In 2012, through comprehensive and consistent traffic policies, and after implementing alternative routes for vehicles, the city banned cars from a very busy section of Slovenska Street. The new street is designated as a shared space, despite high volumes of pedestrian and bus traffic.

In response to the city's call for proposals in 2012, four local architecture firms worked together to redesign the 30-m-wide street. The redesign aimed to prioritize pedestrians, cyclists, and transit users, and increase transit reliability and efficiency. All users are able to participate equally on the shared street because the design does not prioritize motor vehicle traffic. Height differences between different parts of the street were reduced where possible to signal to pedestrians that they are not isolated to the sides.

The street's redesign recalls typical avenues in large European cities, which have primary vertical and horizontal elements to mark the street. On the new Slovenska Street, the vertical element comes from the manna ash trees, and a geometric paving pattern plays the role of horizontal element.

The street became an important transit corridor and one of Ljubljana's main public spaces. The redesign allowed the city to take a key step toward its transportation policy goals. Slovenska Street's unified, contemporary identity allows it to maintain a character unique from the old city center. The street elevates the image of the city and improves quality of life.

## KEY STRATEGIES

**Reclaim:** Repurposed travel lanes to widen pedestrian space, reduced the number of moving lanes, restricted vehicular access, created a dedicated bus lane

**Activate:** Added street furniture

## STREET DESIGN ELEMENTS

**Sidewalks:** Installed new pavement, eliminated curb

**Nature and landscaping:** Planted a line of trees

**Seating:** Added new benches and outdoor seating for local restaurants and cafés

**Transit stops:** Installed new transit stops with seating and shelter, installed transit information at bus stops

**Cycle infrastructure:** Added cycle racks

**Amenities:** Installed trash cans





## IMPACT

Improved perception from community: In the beginning, only 20% were in favor of the project and 60% strongly opposed. One year after implementation, 60% were in favor.

Improved air quality: Air with black carbon was reduced by 80%.

AFTER

↑15%
increase in local business sales

## KEYS TO SUCCESS

Having strong political will and local champions

Developing interim phases of project implementation to support the final physical intervention

Working with transit agencies and transit drivers to determine how best to drive on shared streets

Engaging with local media to share project information with local residents and street users



## LESSONS LEARNED

The city faced much public opposition to banning cars from Slovenska Street. Developing consistent traffic policy and building alternative routes for car traffic allowed the city to achieve the conditions needed to close the street to car traffic in 2012.

# 4.4 Thoroughfares

Thoroughfares are major corridors in cities, designed to move vehicles. They often divide and disrupt adjacent neighborhoods. These streets act like urban highways and can disproportionately affect pedestrians and cyclists, especially children and caregivers. There is usually a lack of pedestrian crossings, or large distances between them, and sidewalks and cycle facilities are narrow or nonexistent.

They often have multiple wide lanes that invite high-speed or high volumes of vehicular traffic, inducing demand. Lack of transit-only lanes severely reduces transit reliability.



Mexico City, Mexico



# 4.4.1 | Thoroughfares



Accra, Ghana



Copenhagen, Denmark



Guangzhou, China



Bogotá, Colombia



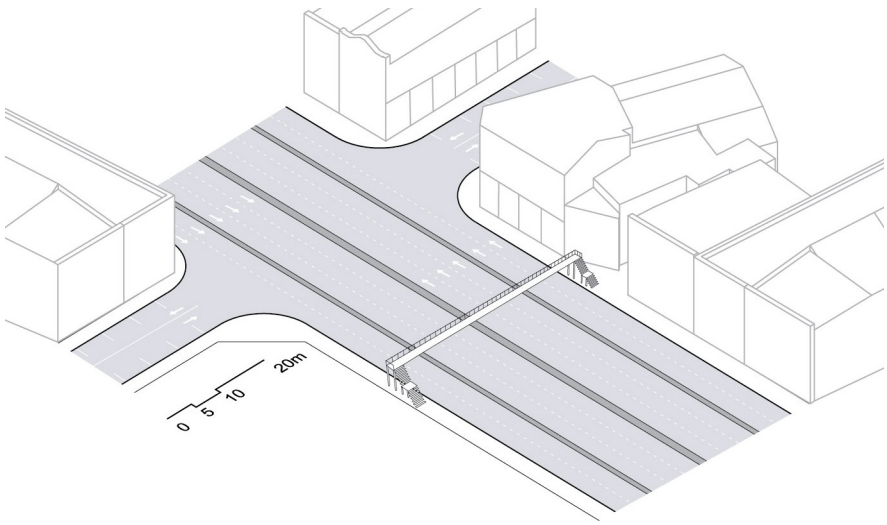
Cape Town, South Africa



New York City, USA

## Existing conditions

This is a large, 46-m-wide street with five travel lanes in each direction: three for through-traffic and two for local street access. Sidewalks are obstructed and not maintained. Cyclists must ride alongside vehicles moving at dangerously high speeds, and transit is often stuck in congestion, causing delays for transit riders. *For more information, see page 86.*




road bed

sidewalk

transit-only lane

transit stop

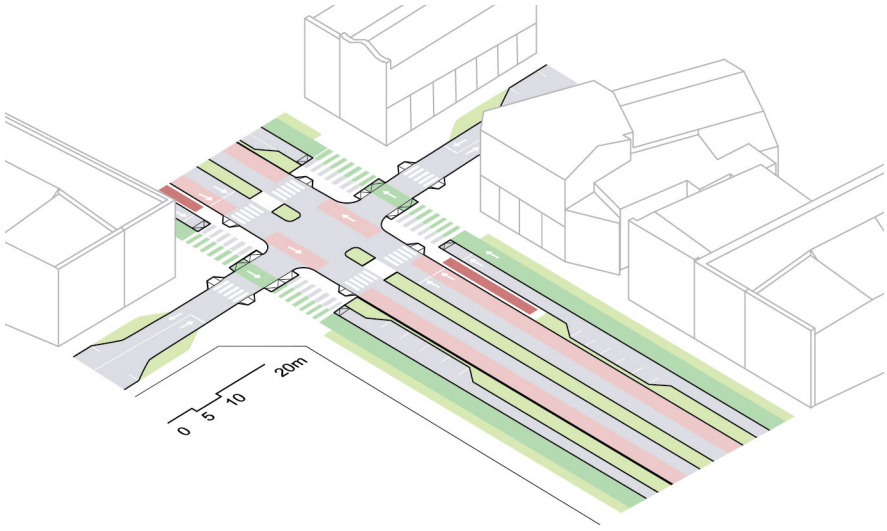
cycle facility

landscaping

# Redesign ideas

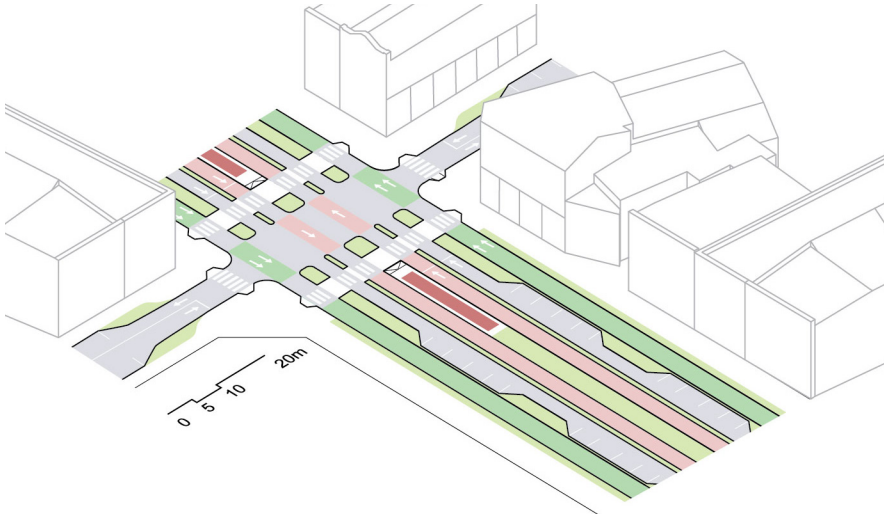
## SEPARATE THROUGH AND LOCAL ACCESS

The central lanes are redesigned with a single travel lane and dedicated bus lane in each direction. The adjacent service street maintains local access at reduced speeds in a single vehicle lane, providing freight access for local business, and includes accessible parking. Raised, protected cycle facilities allow kids and caregivers to cycle safely. *For more information, see page 87.*



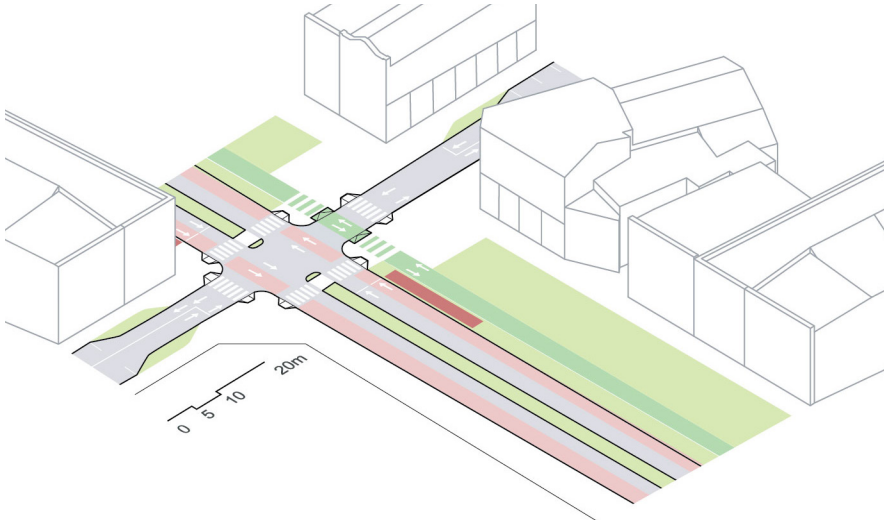

## CENTER-RUNNING TRANSIT

Reduce the number of travel lanes but increase street capacity by implementing center-running bus rapid transit and including wide cycle facilities. Incorporate elements for play and learning into central boarding stations for use by families waiting for transit. A single travel lane in each direction is dedicated to private vehicles, with select areas for loading and parking marked in the adjacent median. The side medians also provide spaces for large shade trees, electric-car-share and cycle-share stations, and pedestrian refuge islands.

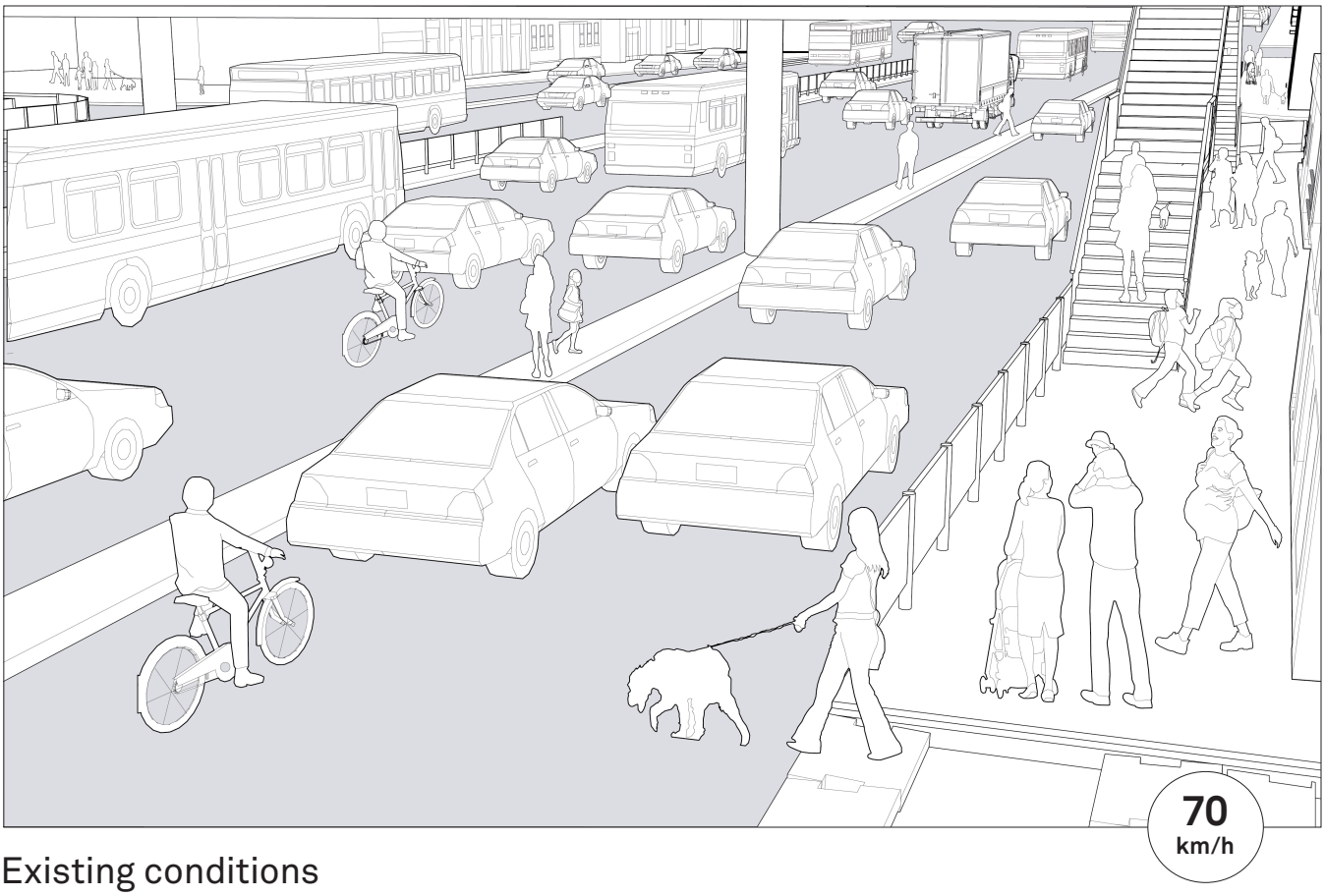



## ADD A LINEAR PARK

Where the thoroughfare plays an important role in pedestrian activity and there is a need to increase access to high-quality public spaces, part of the street can be transformed into a linear park accommodating cycle and pedestrian paths, play areas, and landscaping. Active ground-floor use on the side of the park allows clustering of amenities with play and recreational areas. Reallocating vehicular travel lanes with dedicated transit lanes and cycle facilities in each direction allows through access by more sustainable transit modes.



# 4.4.2 | **Thoroughfares** (46 m)




## Existing conditions

This example serves as an arterial road. Travel lanes are wide, encouraging vehicles to speed. Despite the amount of space available, it is often crowded. The street is frequently used by trucks and other large vehicles, which adds to the poor air quality and increases noise pollution around such streets.

There are no level pedestrian crossings and infrequent traffic signals. Pedestrian overpasses exist but are used infrequently because they are inconvenient. As a result, families risk their lives trying to cross the road to access services and transit stops.

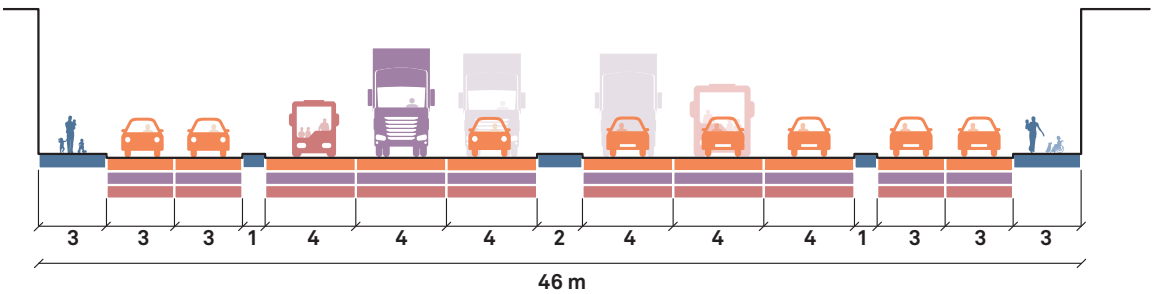
Buses share lanes with other vehicles, making transit slow and unreliable. Transit stops lack shade and seating, which are critical for young children and older adults.

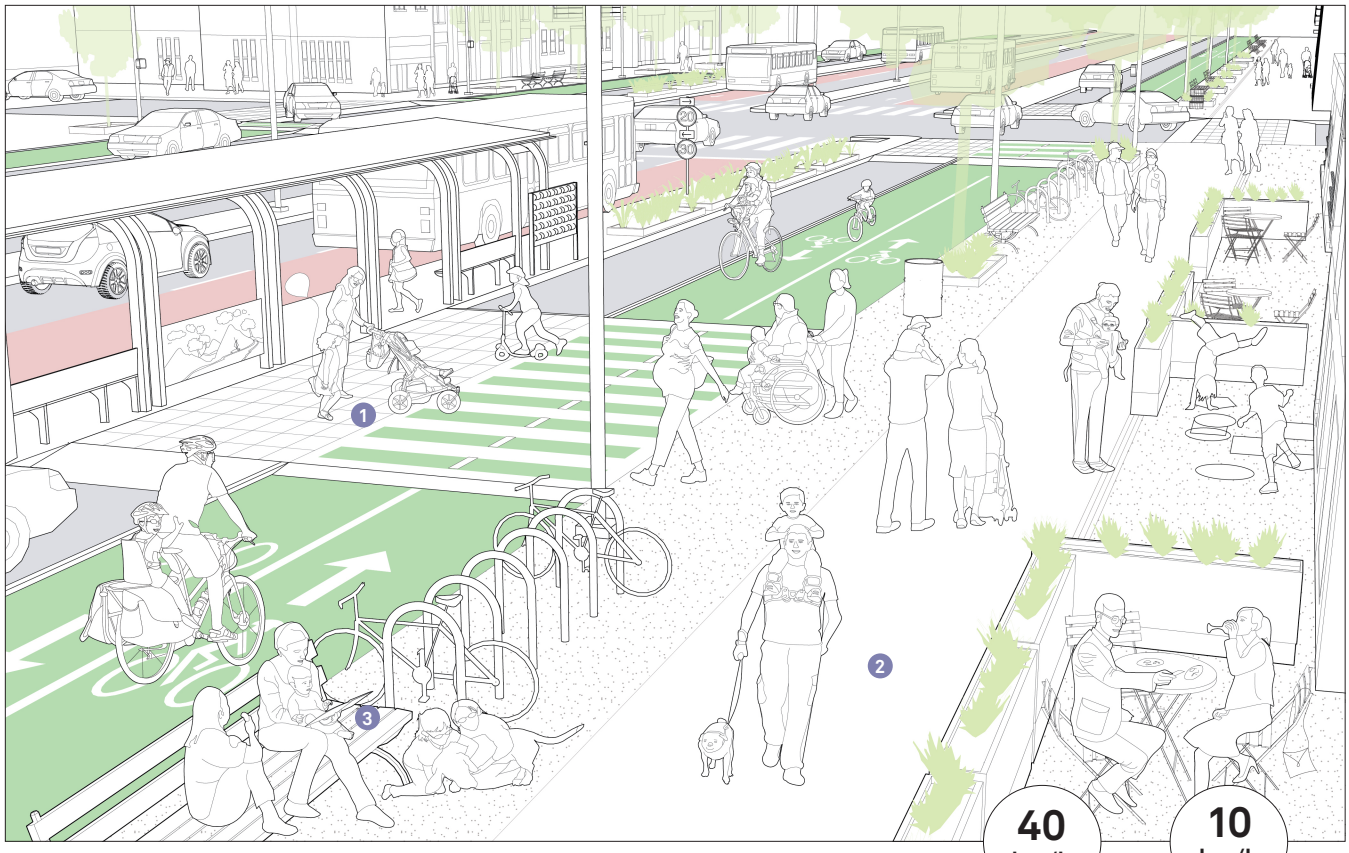
Pedestrians must watch out for fast-moving vehicles that access buildings along the road. Curb cuts for vehicular access are frequent and large, so sidewalks are discontinuous, making walking especially difficult for people with strollers or limited mobility.

Cyclists are forced to ride alongside vehicles moving at dangerously high speeds, at great risk to their safety.

Blocks are long and have large, monofunctional buildings, which are set back from the sidewalk and enclosed by walls and fences. At night, the lack of visibility makes the road conditions even more dangerous.

In some places, new developments have added density and commercial activity since the thoroughfare was built.






## Redesign: Separate through and local access

### PROTECT

One local travel lane in each direction has been maintained with lower speed limits and separated from transit and fast-moving lanes. Limited parking and loading zones with time restrictions have been added in local lanes.

Crossing distances have been shortened by adding curb extensions and refuge islands.

1 Raised crossings have been added at intersections and near transit stops.

Adjacent local streets have been designed to encourage lower speeds, with traffic calming and added signage to inform motorists that they are entering a calm zone.

### RECLAIM

The central lanes have been redesigned with a single travel lane and dedicated bus lane in each direction.

Travel-lane widths have been reduced to reclaim space for pedestrian use.

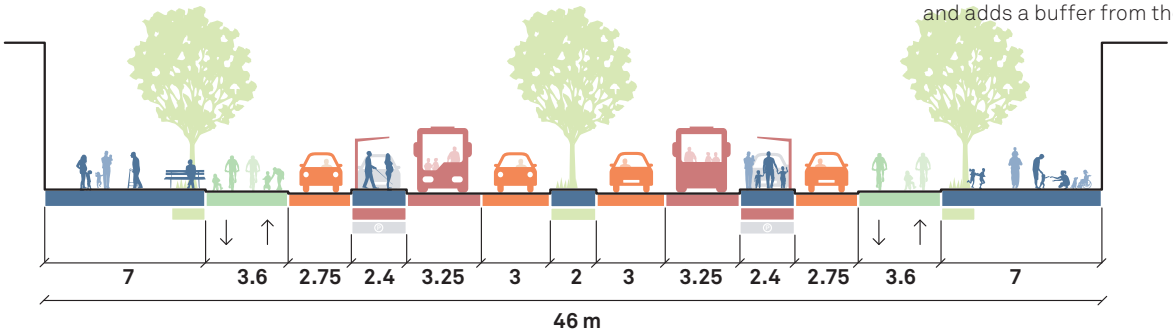
### UPGRADE

2 Sidewalks have been widened to accommodate a 2.4-m-wide clear path in addition to other zones.

Signalized, level pedestrian crossings have been added at intersections and near transit stops.

### ACTIVATE

3 A street-furniture zone has been defined to accommodate play and pause spaces. Transit shelters, street lights, and benches have been incorporated and specific spaces for street vendors assigned. Landscaping provides shade and adds a buffer from the road bed.



CASE STUDY



# Parques del Río

**Location:** Medellín, Colombia

**Implementing organization(s):** Mayor's Office, Administrative Planning Department of Medellín, Ministry of Physical Infrastructure, Empresa de Desarrollo Urbano, Botanical Garden of Medellín, Latitude Architecture and City Workshop, EDL Consortium, Integral Consortium - Interdesigns, Guinovart Obras y Servicios Hispania S.A., OHL Construction Group, Bateman Ingeniería S.A.

**Timeline:** 2013-present





## OVERVIEW

Parques del Río is a key component of Medellín's citywide masterplan (Plan de Ordenamiento Territorial, covering 2014 to 2027), which aims to create a more compact, equitable, and sustainable city.

The Medellín River, and the highways built alongside it, divide the city of Medellín. The major goal of the project is to physically and socially integrate both sides of the river while connecting to the identity of the greater Valle del Aburrá region. This way, the river can become the backbone of the city's public space network. The project consists of transforming over 17 km of riverfront through eight phases of capital construction.

The first phase, west of the river, ran from 2015 to 2016. A 400-m stretch of existing highway, Autopista Sur, was buried underground; adjacent streets were redesigned; and a 63,000-$m^2$ park was created. The second phase, east of the river, is currently under construction. This phase will bury an addition 530 m of vehicular travel lanes. Together, these phases create over 80,000 $m^2$ of public space, with multiple options for families to move, stay, and play.

Goals of the project also include restoring local ecosystems.

## STRATEGIES

**Upgrade:** Painted crosswalks

**Reclaim:** Buried and covered vehicular travel lanes to create a linear park, removed curb along streets surrounding the park, installed bollards and signs

**Activate:** Added street furniture and play elements

## STREET DESIGN ELEMENTS

**Sidewalks:** Repaved sidewalks along adjacent streets, implemented new pathways (at-grade and elevated) along the river, implemented two new pedestrian and cycle bridges across the river

**Pause and play spaces:** Built a "sand zone" with a playful structure and a "clear zone" with grass and multiple benches, resurfaced an existing play court

**Seating:** Installed multiple seating options along the park

**Nature and landscaping:** Created zones with abundant shade, grass, and other plantings, including 194 native tree species in the project

**Pedestrian crossings:** Added new crossings along adjacent streets

**Cycle infrastructure:** Installed cycle lanes along adjacent street

**Amenities:** Installed lighting, installed new signage along adjacent streets, installed trash cans





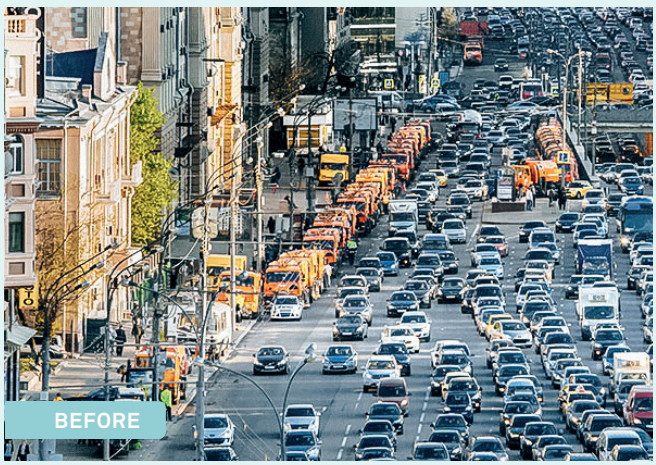
CASE STUDY

# Bringing Gardens Back

**Location:** Moscow, Russia

**Implementing organization(s):** Strelka KB, Bureau Novoye, Viles & Paysages, VEGA, Snøhetta, Topotek 1, GROSS MAX, Michel Desvigne Paysagiste

**Timeline:** 2015-2017







## OVERVIEW

The Garden Ring is a 14-lane highway surrounding Moscow's historic city center, with narrow sidewalks that are frequently used for parking. A 15.6-km stretch of this road was transformed into a 10-lane street with very wide sidewalks, reclaiming essential space for pedestrians that was once dominated by motor vehicles. This project is part of a citywide program called My Street in which, since 2014, the city of Moscow has upgraded certain urban streets to create pedestrian-friendly public spaces and connect an efficient transit system.

The guiding principle of the Garden Ring redesign was called 100 Gardens of the Garden Ring and was based on bringing gardens and trees back to the ring road, restoring space for pedestrians, and reuniting the city center and its periphery.

The project brought together 18 architecture firms, both young, local offices and internationally known designers. Strelka KB, a local urban design consultant, facilitated this process. The ring road was broken down into smaller spaces for the redesign, and key spaces were developed by these design offices.

## STRATEGIES

**Upgrade:** Widened sidewalks

**Protect:** Reduced the number of vehicle travel lanes and shortened crossing distances

**Reclaim:** Unused spaces turned into parks and plazas

**Activate:** Added 13 new public spaces, added a skateboard park under a bridge

## STREET DESIGN ELEMENTS

**Nature and landscaping:** Planted 2,880 large trees, added permeable paving to improve drainage

**Pedestrian crossings:** Created 20 new pedestrian crossings

**Amenities:** Added lighting

## IMPACT

After the project was completed, new businesses opened along the street.

Much wider sidewalks created safe, pleasant walking spaces for pedestrians of all ages and abilities.

Eight new routes for public transport were created.



CASE STUDY



# Queens Boulevard

**Location:** New York City, USA

**Implementing organization(s):** New York City Department of Transportation

**Timeline:** 2015-present







## OVERVIEW

Queens Boulevard stretches through several vibrant and diverse neighborhoods of New York City, and intersects cultural institutions, shopping centers, four major highways, ten subway stations, and over a dozen bus lines. But as the area's population surged and transit ridership soared, its central boulevard remained, for decades, one of the most dangerous corridors in the city. The street's highway-like design and fast vehicular speeds contributed to the nickname "The Boulevard of Death."

New York City's Department of Transportation (NYC DOT) planned the redesign of Queens Boulevard to mitigate specific patterns of crashes and injuries, and developed an innovative design to accommodate all roadway users. Over a period of decades, NYC DOT has implemented progressively more ambitious safety treatments on Queens Boulevard, beginning with adding 30 seconds of pedestrian crossing time to each signal cycle. This allowed single-stage crossings, preventing people from being stuck on a vehicular medians. The redesign also repurposed space on the service road and converted it into both a pedestrian path and a protected cycle lane adjacent to the Boulevard's median, creating a complete street that improves safety and accessibility for all users.

In 2015, NYC DOT implemented this 10- to 8-lane conversion on a 2-km section of Queens Boulevard, and added 4 km of redesign over the next two years. Trees, benches, and cycle racks will be added; bus stops will be relocated to the median; and a large art installation will be added to the street.

Queens Boulevard has shown the impact possible with low-cost, quick-to-install materials.

## STRATEGIES

**Upgrade:** Added new pedestrian crossings

**Protect:** Shortened pedestrian crossing distances, redesigned slip lanes to facilitate slower and safer movements between the service road and main boulevard

**Reclaim:** Removed parking lane from the service road to widen medians and add cycle lanes

AFTER

**41%**
**fewer pedestrian injuries**










## KEYS TO SUCCESS

NYC DOT engaged in a thorough community engagement process for Queens Boulevard, including through workshops, online portals, on-street interactions, and community meetings. Local business owners were also engaged to understand how they used the street.

## LESSONS LEARNED

Limited resources do not mean the potential for change is limited. The vast majority of the Queens Boulevard project was implemented with paint, markings, and plastic bollards in only a few months, but completely transformed a very dangerous street. This project shows the transformative impact that can be achieved per mile of street with limited resources.



AFTER

**45%**
**increase in cycling volumes on the corridor**

# 4.5 Special Conditions

Finding areas to create public space amid dense urban environments is a common challenge in cities. There are hidden opportunities in often-overlooked or neglected spaces tucked into city streets, such as alleys, staircases, and vacant spaces below bridges and elevated structures. Sometimes, such spaces have become places for car parking, informal waste disposal, and unwanted activities.

These spaces can be reimagined and repurposed to become beautiful, joyful places for kids and caregivers, and can be reconnected to the larger network of streets for walking and cycling.



Toronto, Canada


UNDE

# 4.5.1 | Special Conditions



Paris, France



Lima, Peru

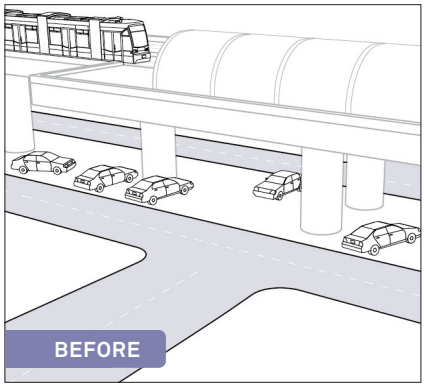


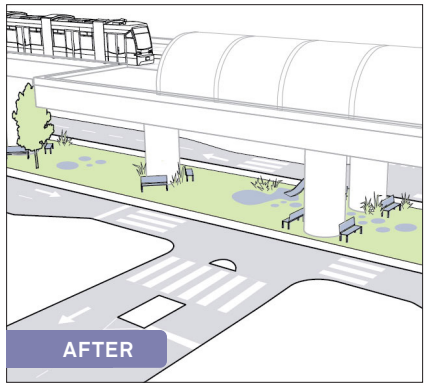
New York City, USA

## Redesign ideas

### UNDER ELEVATED STRUCTURES

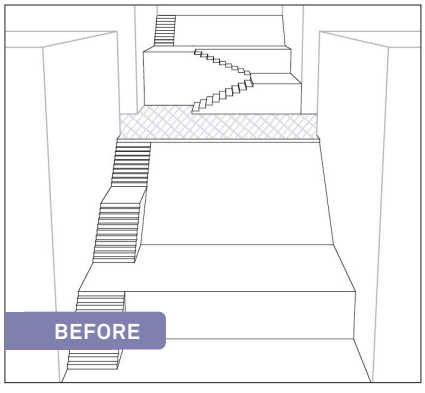
Improving the spaces below and around elevated structures can transform disused spaces into distinctive places, revitalizing neighborhoods and reknitting communities. Redesign the space below elevated structures to create pause and play spaces for families. Markets, cafés, and active recreation facilities can further activate these spaces and transform them into destinations.

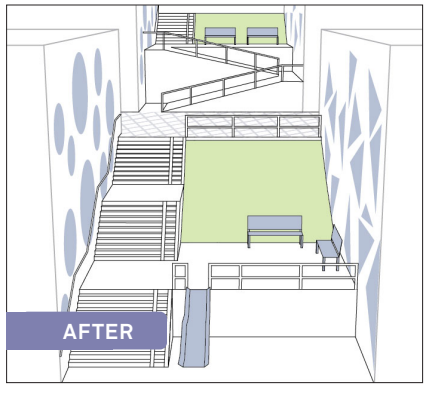



### STAIRCASES

Attractive, well-maintained urban staircases are more likely to be used by kids and families. Maintain paved surfaces to ensure steps are safe to climb, maintain or install storm water drains, install handrails and lighting, and keep the staircase clean. When possible, install side ramps to allow people to push strollers, bicycles, and other wheeled devices such as wheelchairs. Use artwork on walls and steps to let people know they are welcome.




road bed

sidewalk

landscaping

highlighted activated space

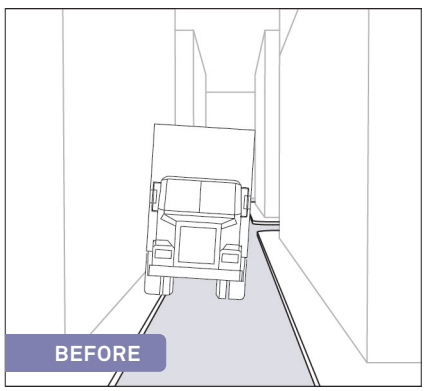

Medellín, Colombia

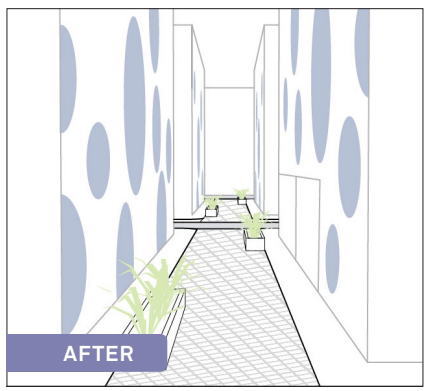

Wellington, New Zealand


Utrecht, Netherlands

## LANEWAYS AND ALLEYS

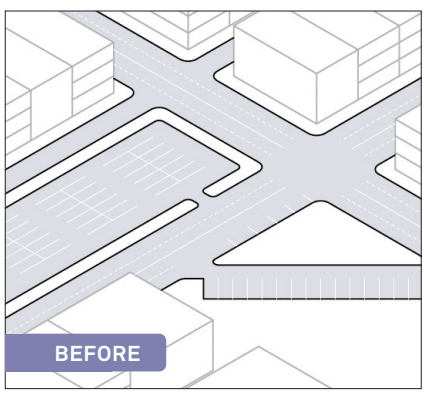
Turn laneways into pedestrian-priority streets. Ensure that entrances are visible and distinguishable on sidewalks, use paving materials that slow vehicles down, or restrict vehicular access. Install lights and ensure that laneways are clean and well maintained to invite active ground-floor uses. Regulate waste disposal and placement of large trash receptacles. Convex mirrors can be mounted to improve the visibility of the pedestrian crossing on narrow lanes. Install mid-block crossings where laneways intersect with other streets.

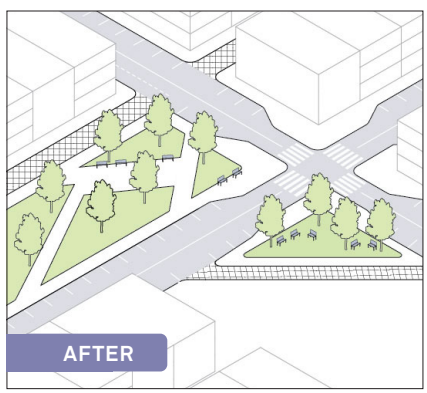


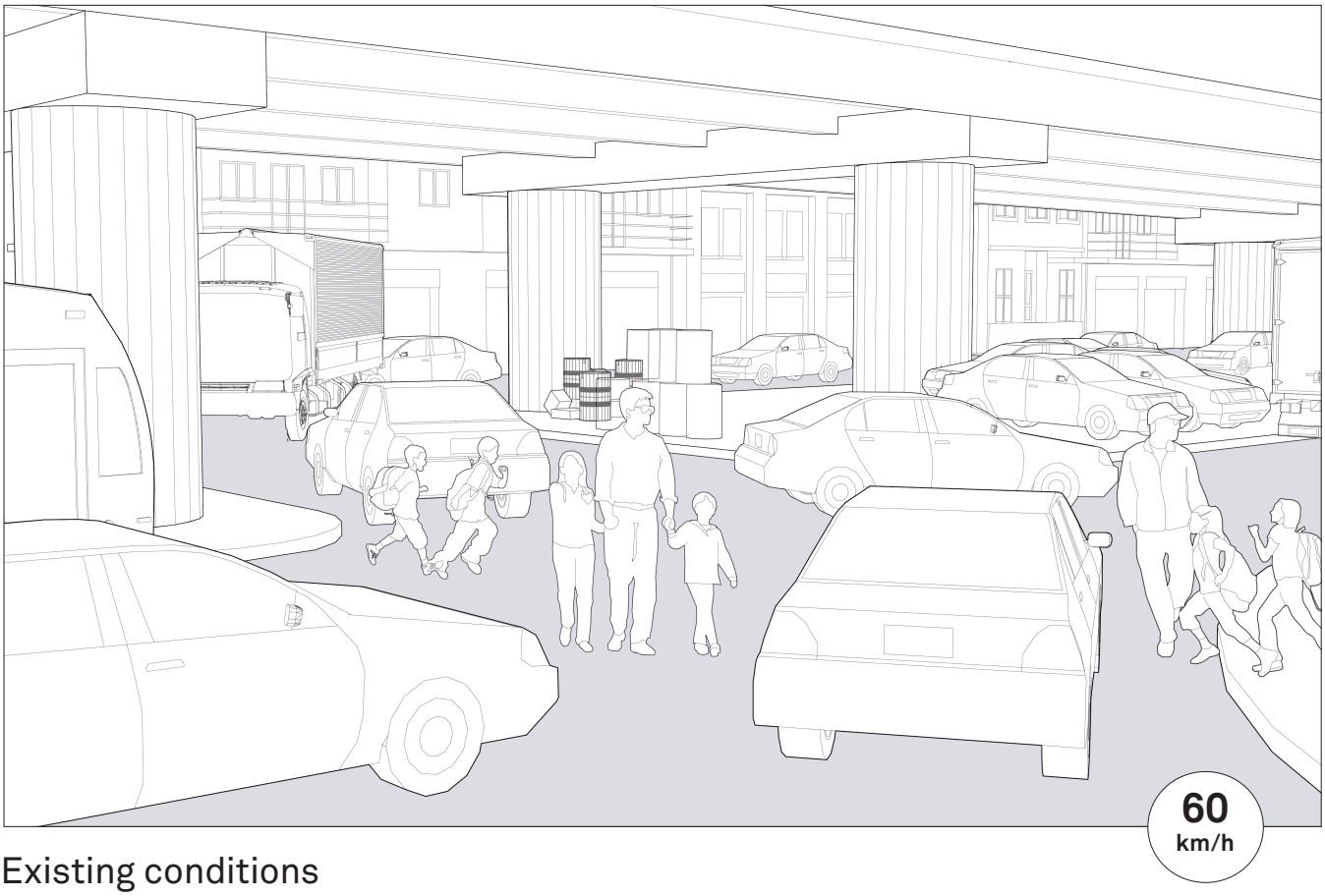

## PLAZAS AND PARKING LOTS

Parking lots are spaces prime to become public spaces that offer pause and play opportunities for children and caregivers. Parking lots that are part of or adjacent to city-owned property can be incorporated into larger street redesigns or transformed in isolation. Add fun and educational elements, provide a mix of permanent and temporary seating to support flexible use of the space and limit costs, and provide lighting to ensure safety at all hours. Incorporate nature by adding planters for short-term use and landscaping for long-term use.



# 4.5.2 | **Special Conditions** (34 m)



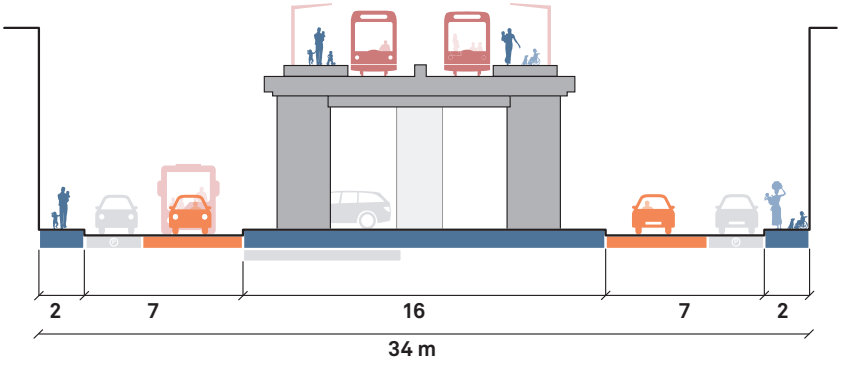

## Existing conditions

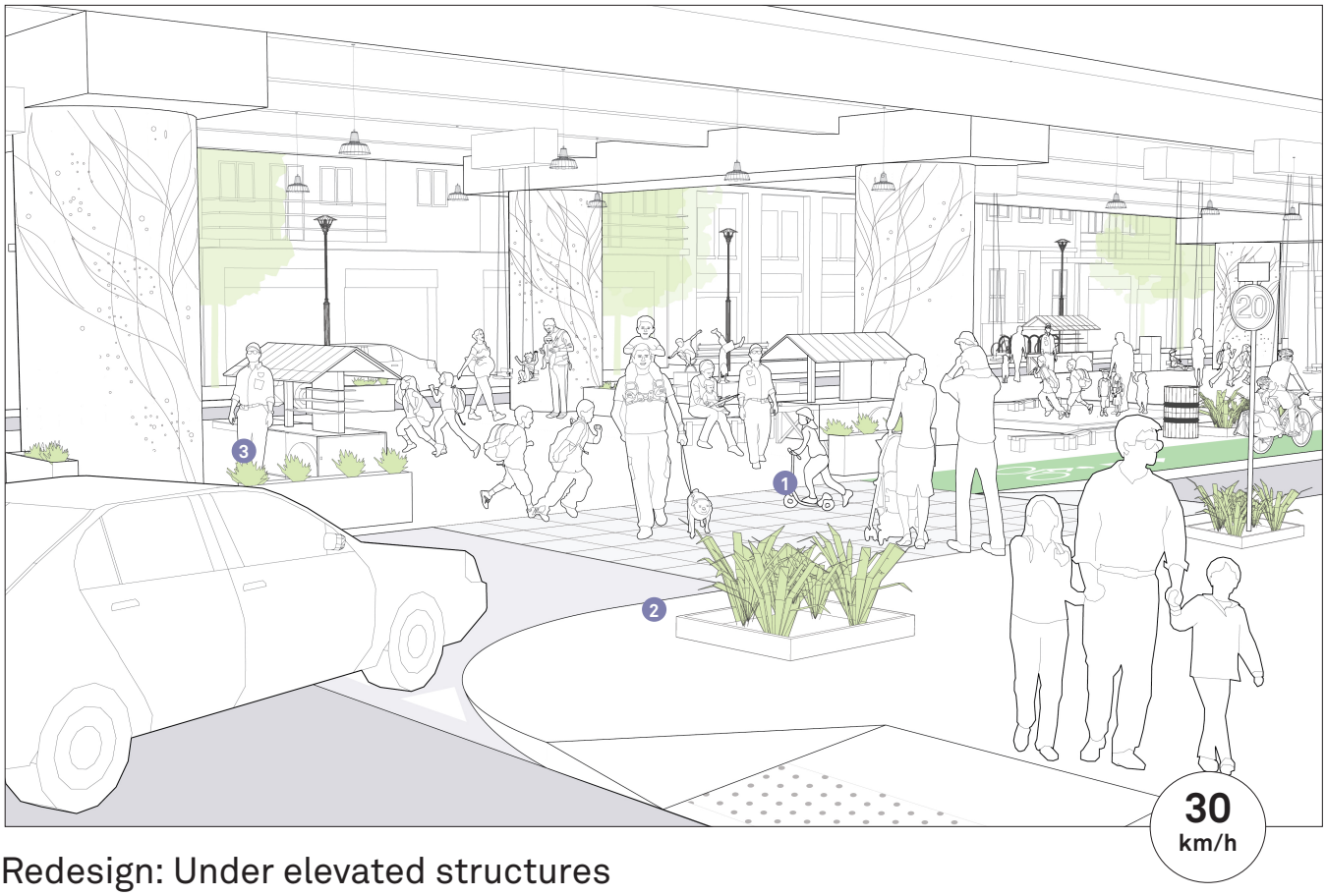
This example shows an elevated transit structure. On the ground level, sidewalks are too narrow for current pedestrian volumes. The street is chaotic and crowded.

Fast-moving vehicular traffic, unmarked pedestrian crossings, and a lack of signals and pedestrian ramps make this a very hostile environment.

Under the structure, a lack of proper lighting and the concentration of noise and smoke create an unpleasant and unfriendly environment.

The space available underneath the elevated road is mostly used for parking and informal waste disposal. Local communities see it as neglected and unmaintained.






## Redesign: Under elevated structures

### RECLAIM

The number of travel lanes has been reduced in order to widen sidewalks and add a protected cycle lane in each direction.

Large vehicles have been granted restricted access and have specific times for loading, which aims to reduce the number of vehicles and amount of noise at ground level.

1 The space underneath the elevated structure has been reclaimed for play and socializing.

### ACTIVATE

Pause and play spaces have been created in the median with street furniture, playful elements, and amenities such as toilets and water fountains.

The aesthetic of the elevated structure has been improved by adding colorful and fun elements and installing artwork.

### PROTECT

Posted speeds have been reduced on the at-grade street.

Travel-lane widths have been narrowed.

Traffic-calming elements such as raised pedestrian crossings have been installed to reduce operating speeds.

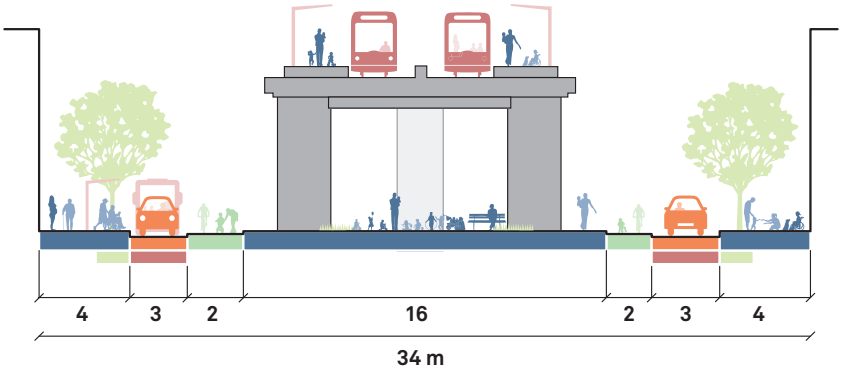
### UPGRADE

2 Pedestrian crossings have been painted where missing. Pedestrian ramps, tactile surfaces, and signals have been installed.

Lighting along sidewalks and underneath the elevated structure has been improved.

### EXTEND

3 Businesses have been allowed to use some of the space underneath the elevated structure, which encourages the use of the street and improves safety.



CASE STUDY



# Mind the Step

**Location:** São Paulo, Brazil

**Implementing organization(s):** Cidade Ativa, HealthBridge Foundation of Canada, UN-Habitat Global Public Space Programme, Ciclo Social Arte, Zoom Urbanismo, Arquitetura e Design, Oscar Pereira Machado School, Novas Árvores Por Aí, Família Nakamura local association, Prefeitura Regional de M´Boi Mirim local authority, AkzoNobel

**Timeline:** 2018







## OVERVIEW

Olhe o Degrau (Mind the Step) is an award-winning initiative that raises awareness about the role of public staircases in São Paulo through physical interventions. Usually abandoned and degraded, stairways are often viewed as unsafe places. Mind the Step brings the opportunity of revealing the potential of simple and collaborative interventions for transforming staircases, allowing these places to be reintegrated into the pedestrian mobility network and to be used as public spaces for people to gather, for leisure and recreation. The initiative has retrofitted five public staircases in the city, three of which are close to public schools.

This staircase is located on Rua Agamenon Pereira da Silva, in Jardim Nakamura, a low-income community. It is within walking distance of two public schools, a daycare, a health center, residences, bus stops, local shops, and other services. The project engaged and received support from the local school's students, parents, and staff; neighborhood associations; local urban artists; and the local government authority. The result was a collaborative intervention that improved the quality of the space, provided opportunities for pausing and staying, and created a safer environment for people who use the stairway in their daily commutes.

Engagement activities were a critical piece of the research, design, and implementation processes. These included meetings, workshops, and activities with local school students and faculty, associations, artists, residents, business owners, and the local government authority.

## STRATEGIES

**Upgrade:** Painted a new pedestrian crossing

**Activate:** Installed street furniture and play elements

**Extend:** Painted murals on walls of adjacent buildings

## STREET DESIGN ELEMENTS

**Pause and play spaces:** Installed a slide, a picnic table, two seating areas, a library, and a community board

**Nature and landscaping:** Built new planters for rainwater drainage

**Amenities:** Installed new LED lights, added speed reduction signage, installed trash cans

## KEYS TO SUCCESS

The entire process benefited from the relationships built during a previous project in the same neighborhood, which helped retain and increase investment in this project. Engaging local residents and business owners was key to creating a sense of ownership, allowing for higher-quality project implementation and maintenance.

Early and consistent engagement with the local authority, through regular meetings and communication, resulted in increased commitment during the process and quicker approvals.

**3x**
**Tripled staircase usage for stationary activities such as sitting and playing**

AFTER





## LESSONS LEARNED

Minecraft was a powerful tool to engage older children and teenagers during the design phase, but it was less appealing for adults. This highlights the importance of using multiple tools during the engagement process to include a variety of stakeholders.

In order to maintain the project's quality after implementation, it is important to develop a plan that includes physical maintenance as well as monitoring and evaluation activities for several months or even several years.

## IMPACT

Use of the steps by children increased by 40%.

After the intervention, all people interviewed reported feeling safe in the staircase. Before, 30% reported feeling unsafe.



AFTER

**100+**
**children involved in meetings and workshops**

CASE STUDY



# Historical Laneways Program: Lorong Bandar 13

**Location:** Kuala Lumpur, Malaysia

**Implementing organization(s):** Kuala Lumpur City Hall, Think City

**Timeline:** 2018



## OVERVIEW

Lorong Bandar 13 is the first of nine laneways that have been identified as part of an upgrading program within the historic center of Kuala Lumpur. These spaces were selected based on their physical conditions, connectivity, and local stakeholder engagement (who collaborate on needed improvements).

In 2018, the city transformed Lorong Bandar 13, using it as a pilot project for the upcoming interventions on other laneways. The first phase of the project included a site analysis, with on-site observations and data collection with main users and local stakeholders. Major issues included informal waste disposal, insufficient lighting, illegal parking, potholes, and irregular paving.

The laneway redesign aimed to create a safe and appealing destination for gathering and socializing, to connect to the area's many restaurants as outdoor eating space, and to increase walkability. The intervention by Think City included painting, seating areas, and a community garden. Some of the flexible spaces are used by neighborhood children to play.

Local associations and the local community were engaged during the design process.

## KEY STRATEGIES

**Upgrade:** Improved lighting, improved maintenance of the space

**Activate:** Installed street furniture and allowed for permanent use of the space, painted ground surfaces with bright colors to indicate paths and create soft boundaries of areas with specific uses

## STREET DESIGN ELEMENTS

**Pause and play spaces:** Installed a raised platform for meetings and events, installed benches and tables

**Nature and landscaping:** Added a community garden with edible plants

## KEYS TO SUCCESS

Involving the local community was key to people feeling responsibility for and ownership of the redesigned laneway. When people care for the spaces they occupy, both those spaces and people thrive. In small increments, the city becomes more comfortable and enjoyable.



## Tiramarama Way

**Location:** Auckland, New Zealand

**Implementing organization(s):** Wraight + Associates, artist Lisa Reihana

**Timeline:** 2014-2018

### OVERVIEW

Tiramarama Way is a pedestrian- and cycle-only laneway in Wynyard Central, an emerging cluster of commercial and residential developments in Auckland's Wynyard Quarter. Drawing on the location's geological history as an intertidal environment, the laneway's design includes elements related to water and light, and encourages play, exploration, pausing and staying by people of all ages. "Purposeful puddles" fill with water in sync with the rising tide, and lights are strung across the space. Bivalve planters and a tree grove bring native plants to the space. The ground surface was designed to abstractly recall the former shoreline.





## Underpass Park

**Location:** Toronto, Canada

**Implementing organization(s):** Waterfront Toronto, PFS Studio, The Planning Partnership

**Timeline:** 2009-2015

### OVERVIEW

A once-neglected space under and around highway overpasses near downtown Toronto was transformed into a fun and engaging park that reconnects the surrounding neighborhoods. Half of the park is covered by elevated road infrastructure from Richmond and Adelaide Streets. The park's design incorporates this concrete canopy as overhead and vertical support for flexible and structured spaces, including basketball courts, a skateboard park, and other playful elements for all ages. The area can also be used for events such as festivals, markets, and other public gatherings. Many murals by local artists decorate the space. Lighting was embedded in the ground and added to columns and archways for nighttime use, and imaginative colors encourage fun interactions near lighting elements.

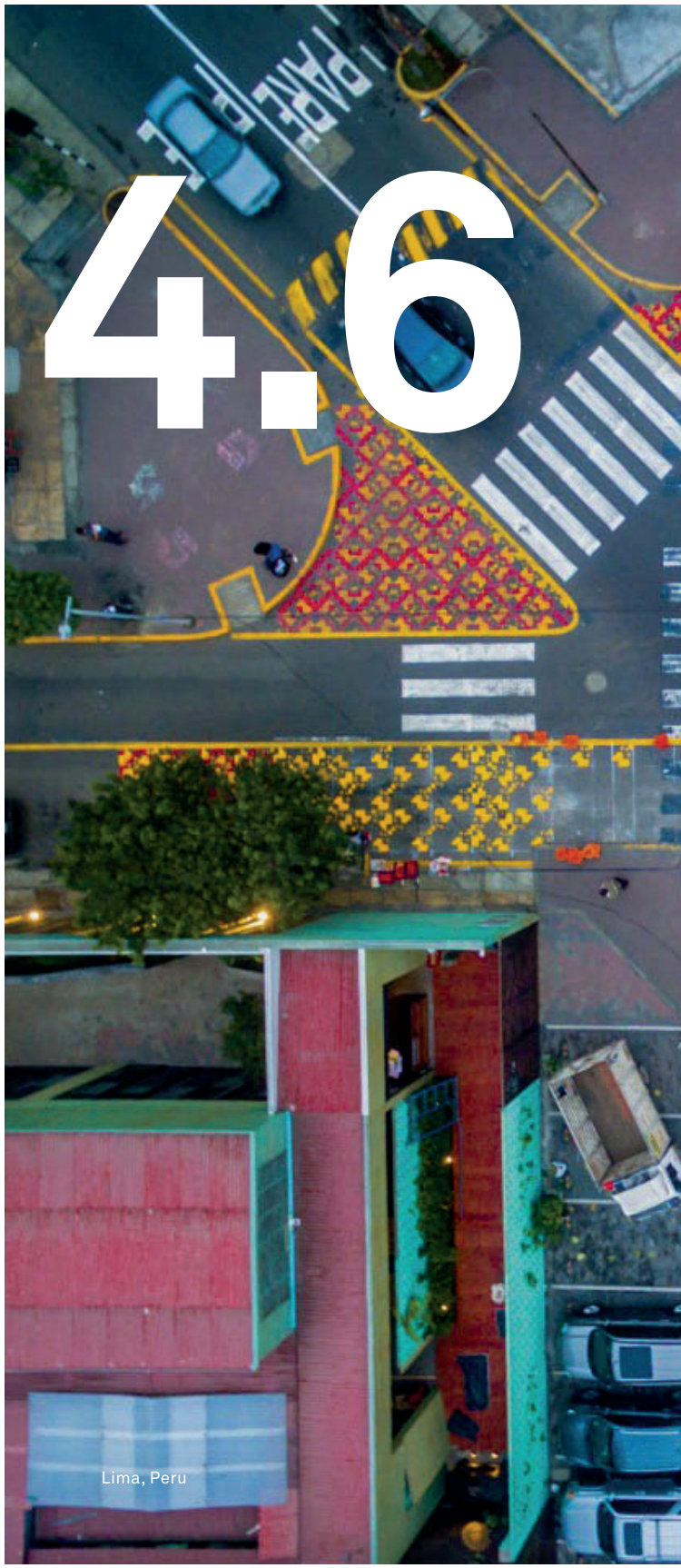


# 4.6 Intersections

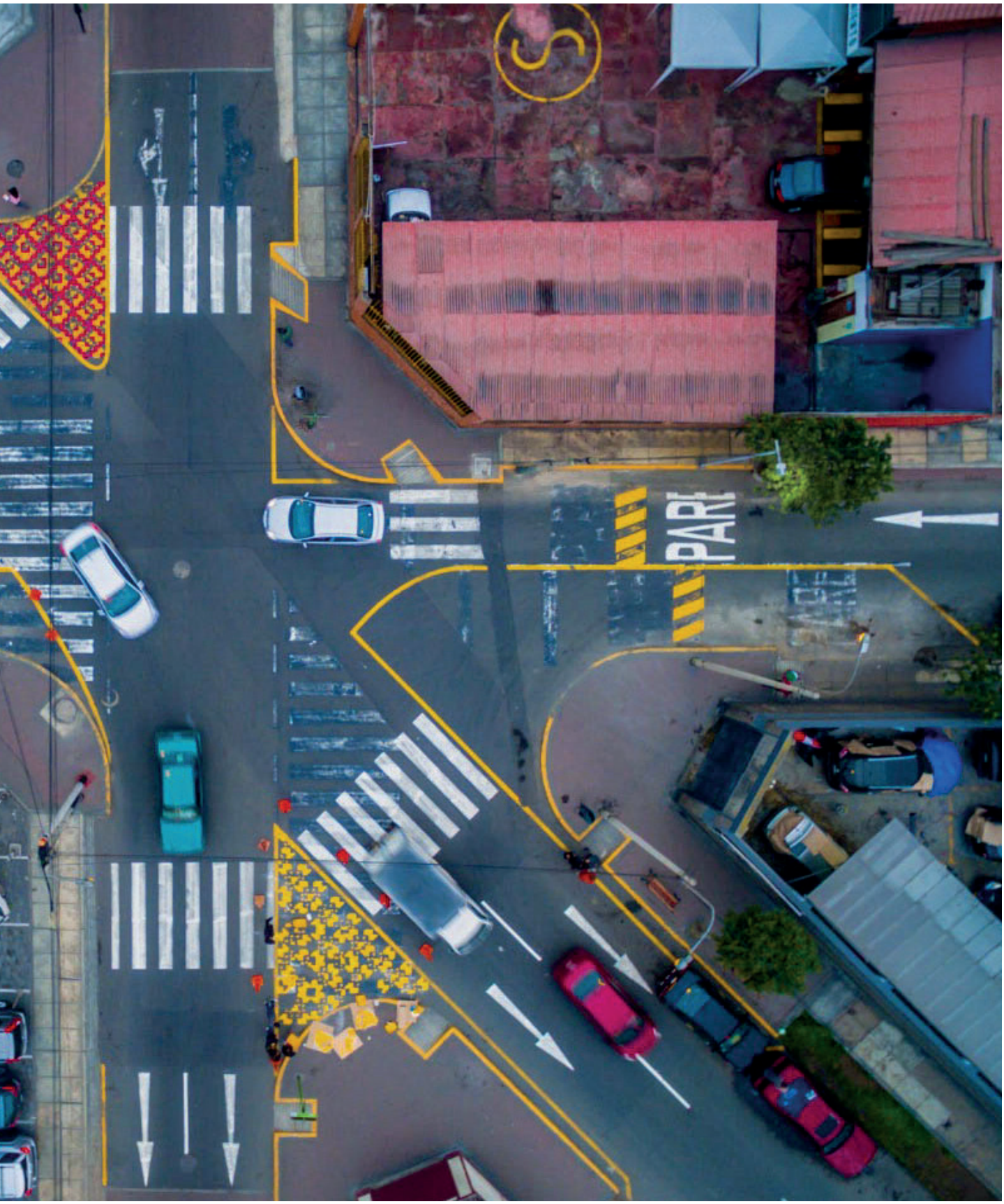
Intersections have long been designed and operated to maximize motor vehicle throughput, presenting risks and barriers for both children and adults. Conventional practices have often called for large turn radii, wide travel lanes, and low priority for pedestrian signals. In millions of intersections around the world, this practice has led to vehicles making sweeping, fast turns and has encouraged chaotic or aggressive driving.

Now, cities around the world are using a combination of rapid implementation techniques and traffic engineering skills to quickly reshape intersections. In many cases, public space has been recovered from the intersection, supporting small urban pause and play spaces. These projects have proven that intersections can be managed for safe access by the most vulnerable kids and adults, as well as highly efficient movement by large numbers of people.

The key to unlocking public space at intersections is often the same technique needed for safety: make the intersection smaller and easier to cross, reduce the total number of approach lanes to the minimum needed rather than the maximum possible, and give priority to transit and other public services rather than mixing them into general traffic streams.



Lima, Peru

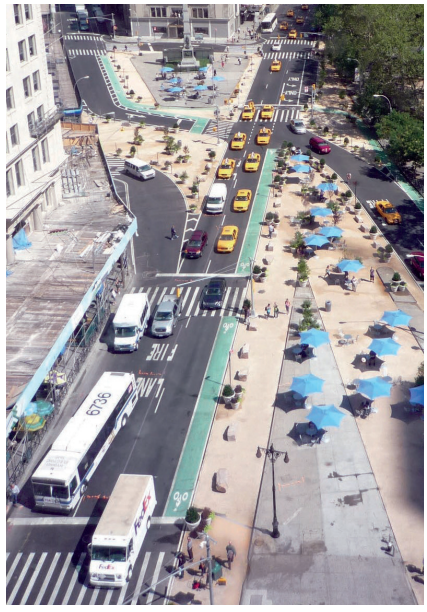

PARI

# 4.6.1 | **Intersections**

Every city has a variety of intersection types that vary in their complexity based on size, number of users, and geometry. When redesigning any intersection, these design strategies remain constant.

- **Design compact intersections:** Compact intersections reduce exposure, slow traffic near conflict points, and increase visibility.
- **Simplify geometry:** Complex intersections can be simplified into multiple smaller intersections to increase legibility, uniformity, and safety. Prioritize perpendicular intersections.
- **Analyze networks:** Intersections should not be observed in isolation but as part of a larger network. Integrate signal timing with designing intersections as an alternative to widening them to help reduce speeds between junctions and increase safety.
- **Increase pedestrian space:** Redesigning intersection geometry can increase pedestrian space. Use interim plazas and low-cost elements and materials to quickly enhance public life.
- **Prioritize sustainable modes:** When redesigning intersections, prioritize pedestrians, cyclists, and transit users.

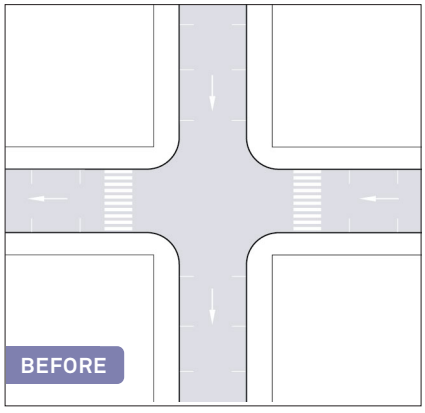
*For more information, see Global Street Design Guide Chapter 11 and Don't Give Up at the Intersection.*

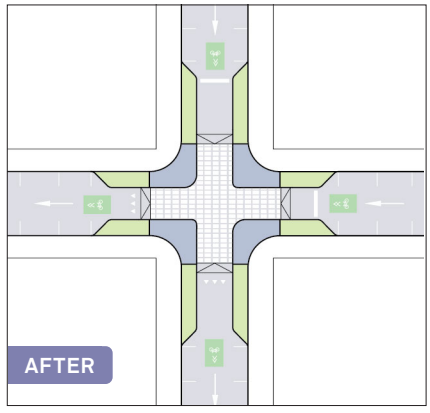


New York, USA

## RAISED INTERSECTION

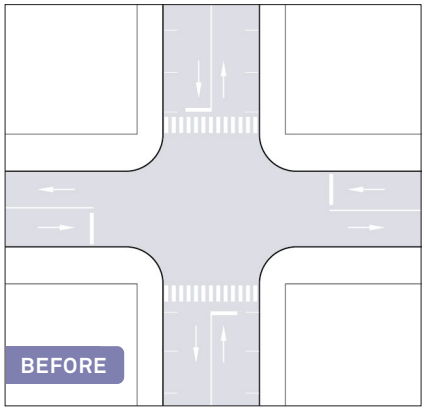
Raising intersections improves visibility for motorists and provides vertical deflections to create a safe, slow-speed condition. Add curb extensions to increase pedestrian space, reduce crossing distance, and prevent parking at intersection corners. Where vehicles are not turning, design corners with the smallest constructible radius, approximately **0.6 m**.

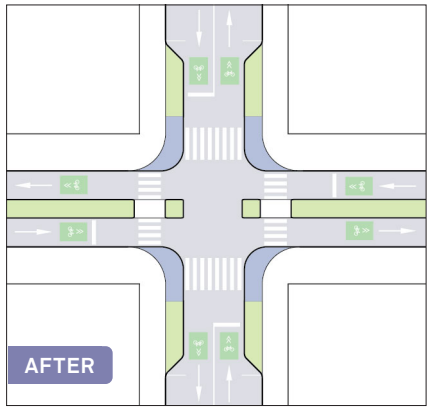



## SIMPLE FIX

Make intersections compact, tighten corner radii to reduce turning speeds, and limit turn lanes where possible. Narrow travel lanes. Add refuge islands to facilitate two-phase crossing and to reduce crossing distances.

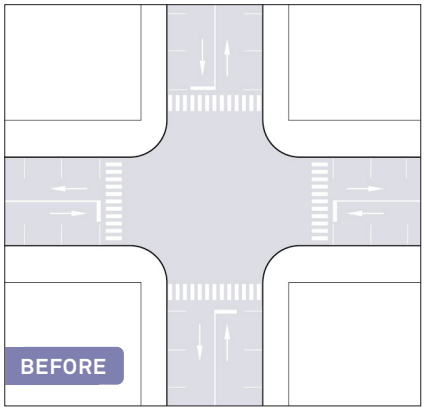


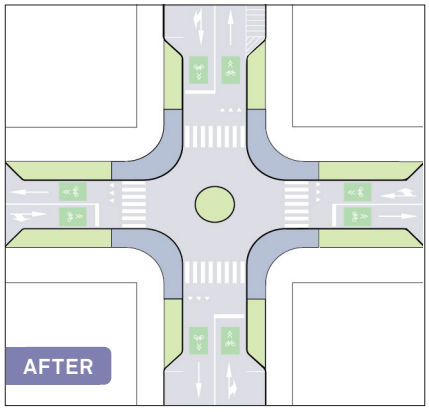




road bed
sidewalk
cycle facility
landscaping
highlighted reclaimed space

## MINI ROUNDABOUT

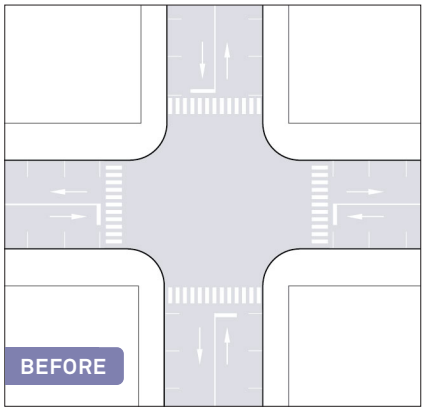
Mini roundabouts are an ideal treatment for unsignalized intersections of small-scale streets. Motorists must yield to pedestrians and vehicles already in the intersection. Pedestrian crossings should be marked to clarify where pedestrians cross and have priority. Install mini roundabouts using simple marking or raised islands. Provide a clearance of approximately **5 m** from the corner to the widest point in the roundabout.

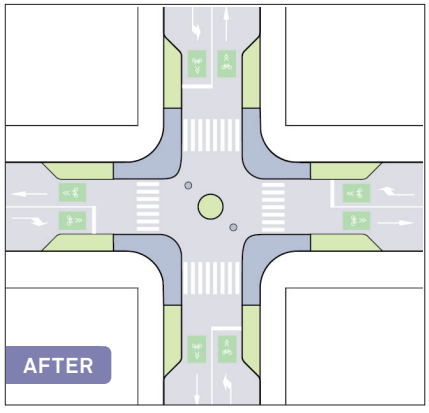



## DIVERT AND LIMIT

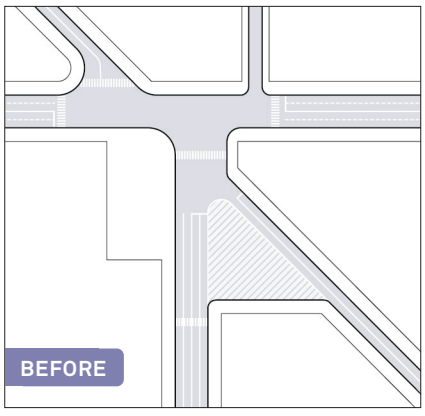
Diverters and other volume management strategies, such as restricted-movement and restricted-access strategies, help in reducing motor vehicle volumes. Reduced traffic volumes improve cyclist comfort and safety.

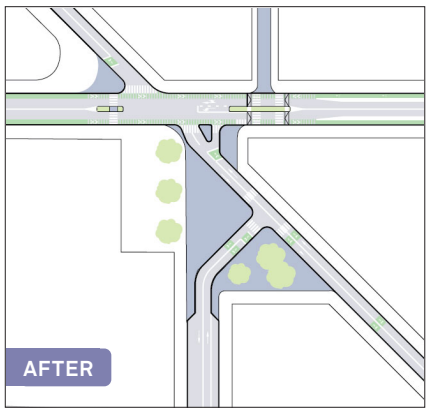



## COMPLEX INTERSECTION

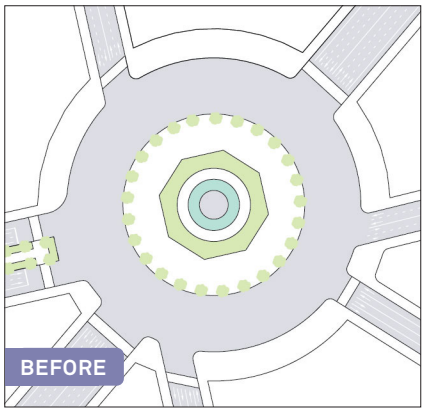
Complex intersections have tremendous potential to fulfill latent demand for public space. Lacking legibility, these intersections present safety hazards to all users. Simplify the intersection by prioritizing orthogonal geometry, reducing the number of streets intersecting simultaneously, adding public space, and changing the function of smaller streets. Redesign intersections to be as close to **90 degrees** as possible.

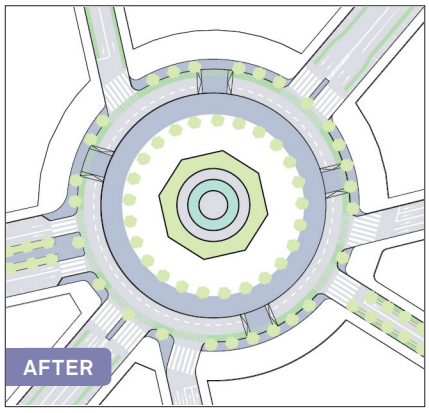


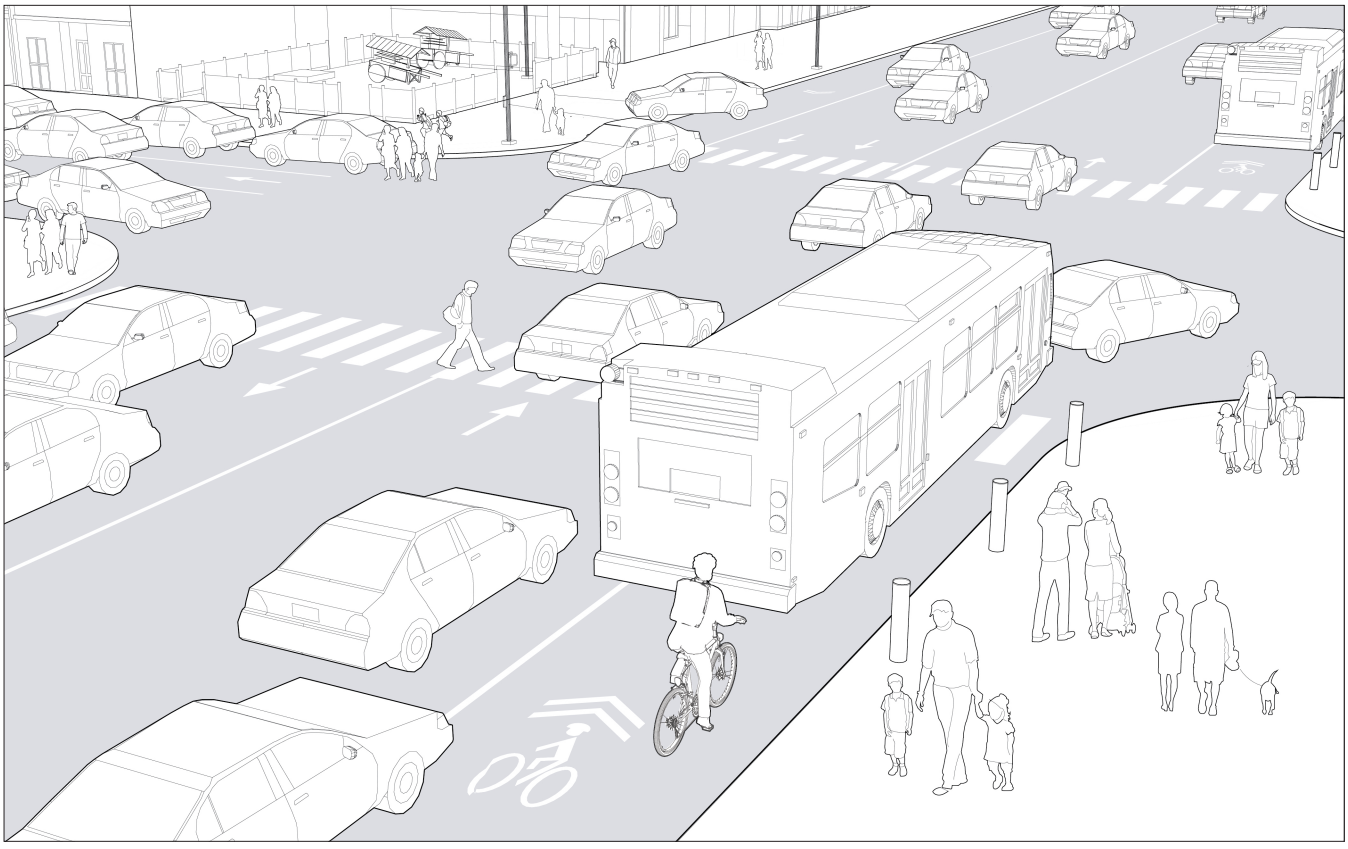

## TRAFFIC CIRCLE

Many large traffic circles have inaccessible central spaces, complex traffic patterns, and hazardous conditions. Reduce the roundabout to two travel lanes, decreasing the number of conflicts and lane changes occurring in the circle. Provide raised pedestrian crossings. Reconfigure street approaches to as close to **90-degree** angles relative to the traffic circle as possible. Extend sidewalks and the central plaza, and add protected cycle facilities.



# 4.6.2 | **Intersections**



## Existing conditions

This example shows an intersection where a major street with high volumes of transit and private vehicles meets a neighborhood street. The proximity to residences, local shops, children's facilities, and access to transit makes it a busy intersection where people have to fight for space, especially during morning and evening peak hours.

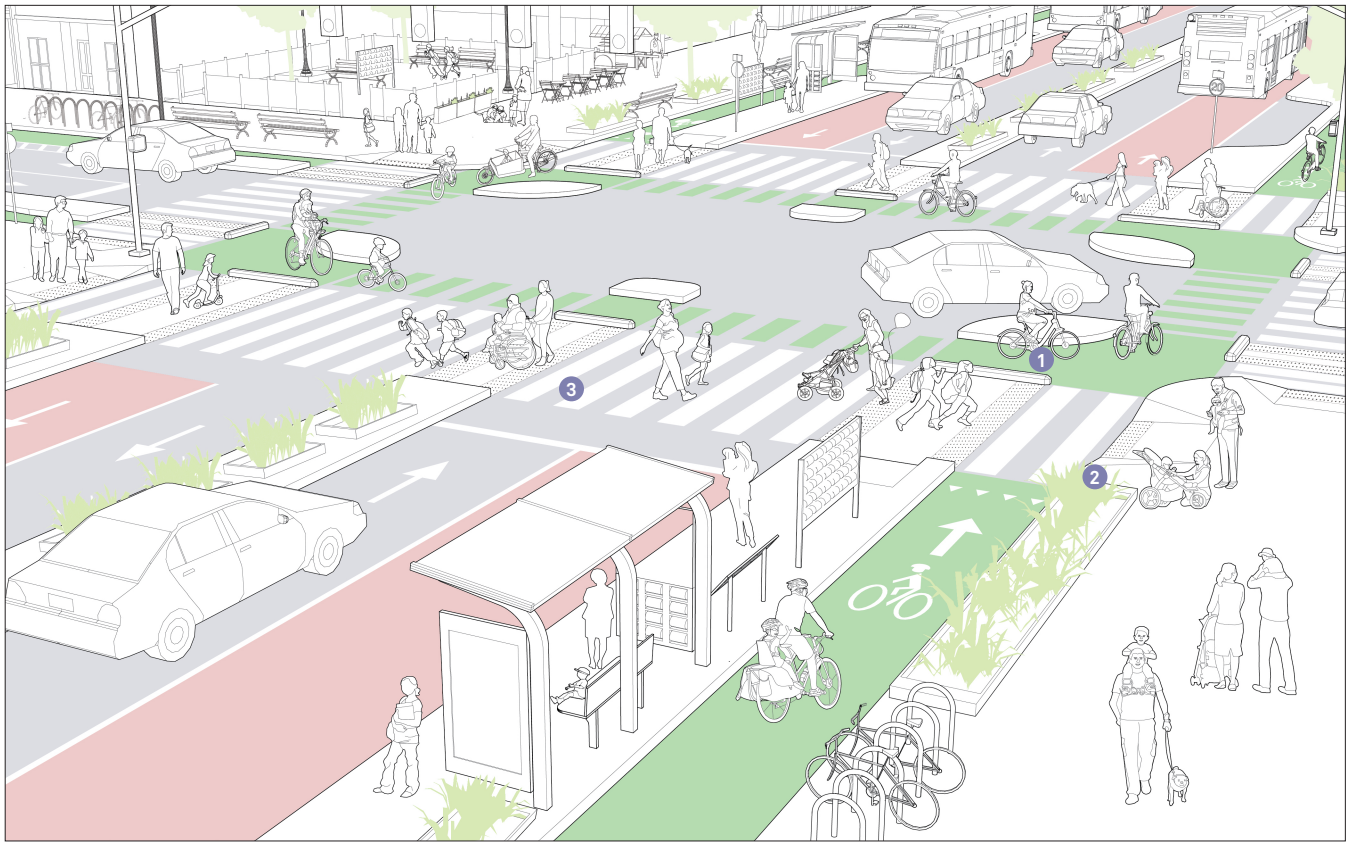
Due to a lack of protected cycle lanes, cycling is uncomfortable and risky. Children on bicycles are forced onto the sidewalk, and very few families use the street for cycling.

Corners become crowded with people waiting to cross. Signals prioritize vehicular traffic over pedestrians.

Large corner radii encourage vehicles to make turns at higher speeds.

Some legs of the intersection lack painted pedestrian crossings and all legs lack elements such as pedestrian ramps that ensure access for people with limited mobility and people with disabilities.

Due to long wait times and infrequent crossing opportunities, families often cross mid-block or against signals to shorten their overall journey time.




## Redesign: Protected cycle intersection

### PROTECT

1 A protected intersection for cyclists has been added to both streets, with corner islands to protect turning bikes.

2 Landscaping and street furniture have been added to separate the sidewalk from the cycleway.

### RECLAIM

Sidewalks have been widened by reducing the number and width of travel lanes, especially near the corners.

### UPGRADE

3 Missing pedestrian crossing markings have been painted, and shorter signal cycles with longer pedestrian phases have been introduced. Pedestrian ramps, tactile warning surfaces, and audible accessible pedestrian signals with tactile buttons have been installed to provide access to people with disabilities. These features also ease crossings for families carrying children or pushing strollers.

### ACTIVATE

Pause and play spaces have been created on sidewalks. Shade and street furniture improves families' experiences while waiting to cross the street.

### EXTEND

Building facades have been regulated to ensure they are active. Building owners can be encouraged to install awnings and other elements to protect pedestrians during rainy or sunny days.

CASE STUDY



# Superblock Poblenou

**Location:** Barcelona, Spain

**Implementing organization(s):** City of Barcelona

**Timeline:** 2015-2018



## OVERVIEW

Barcelona's Superblock program ("Superilla" in Catalan, "Supermanzana" in Spanish) was created to address air pollution, road traffic, and a lack of green spaces. It also promotes public engagement and increases livability of public spaces. The program is based on guidelines of multiple sectoral plans, including the Urban Mobility Plan 2013-2018, the Barcelona Climate Commitment, and the Green and Biodiversity Plan.

Under the motto "we will fill the streets with life," the city identified streets and intersections for temporary and permanent interventions. After a period of implementing and assessing interim transformations, the city pursued a permanent project implementation that would create five types of spaces: pause and stay, sports, cultural, space for neighborhood associations, and spaces for play. To create these spaces, parking spaces and travel lanes were transformed into pedestrian-only or shared spaces. These changes are supported by a comprehensive effort to reroute main vehicular traffic, including bus lines, around the superblocks. Transit stops have also been relocated.

Each superblock is planned, designed, and evaluated through a collective effort involving residents and other local stakeholders. Neighbors may join open community meetings and workshops while a permanent working group, with representatives from both the local community and the city, collaborate throughout the process.

For example, an intersection located at Carrer da la Ciutat de Granada and Carrer de Sancho de Ávila in the Poblenou neighborhood was redesigned to be a playground for children with spaces for caregivers to rest and socialize. Motor vehicles are not allowed to drive across the intersection, but use the one remaining shared travel lane to turn right and avoid the central play space.

## STRATEGIES

**Protect:** Narrowed road bed to reduce crossing distances

**Reclaim:** Removed parking spaces to extend sidewalks, removed travel lanes to create a pedestrian plaza in the center of the intersection.

**Activate:** Installed play structures, benches, and other street furniture

## STREET DESIGN ELEMENTS

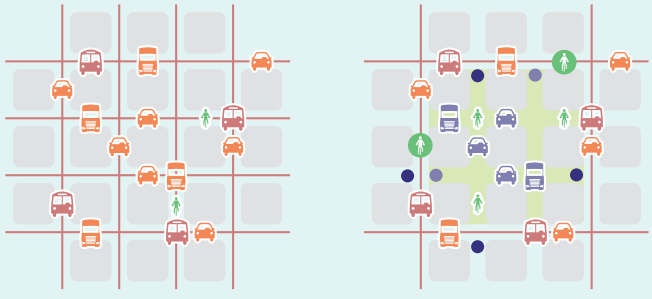
**Sidewalks:** Painted the sidewalk and new plaza with a new surface pattern, added tactile paving for pedestrians with visual impairments

**Pause and play spaces:** Installed a large playground and other play elements in the center of the intersection

**Nature and landscaping:** Installed trees in planters

**Seating:** Installed benches

**Amenities:** Installed new trash cans, relocated existing large trash receptacles





CASE STUDY

# Vision Zero Zone Barrio El Inglés

**Location:** Bogotá, Colombia

**Implementing organization(s):** City of Bogota, NACTO-GDCI

**Timeline:** 2018-2019







## OVERVIEW

This three-day pop-up transformed an eight-legged roundabout where motor vehicles often travel at unsafe speeds. The design reduced the intersection to six legs, connected the public space at the center of the roundabout to three of the surrounding blocks, increased space for pedestrians and cyclists, and encouraged vehicles to drive at safer speeds. More than 50 Bogotá Mobility Department staff members painted 2,250 $m^2$ of new public space over 18 hours.

The temporary transformation came about after the community requested improved road safety in the area. Between 2010 and 2018, the Bogotá Mobility Department counted 10 road traffic deaths and 123 injuries in the neighborhood, primarily pedestrians. Prior to the implementation, city staff and NACTO-GDCI facilitated seven community engagement events to hear the community's concerns.

## KEY STRATEGIES

**Protect:** The maximum pedestrian crossing distance was reduced to 8.5 m from 32 m (73% shorter).

**Reclaim:** The number of vehicle travel lanes was reduced to reclaim space for pedestrians in the central plaza and to create new plazas connected to surrounding blocks.

## IMPACT

Metrics collected during the intervention period showed that there were 60% fewer conflicts at the same peak hour than before the pop-up: 70 pedestrian-vehicle conflicts were reduced to 28.

Conflicts between pedestrians and heavy vehicles were reduced by 79% during the pop-up, from 48 conflicts to 10 at the same peak hour.

According to over 700 intercept surveys during the pop-up, 85% of respondents said the redesign improved road safety




AFTER

**79%**
**of the people surveyed want the project to be permanent**





Sydney, Australia

# 5 Street Design Elements

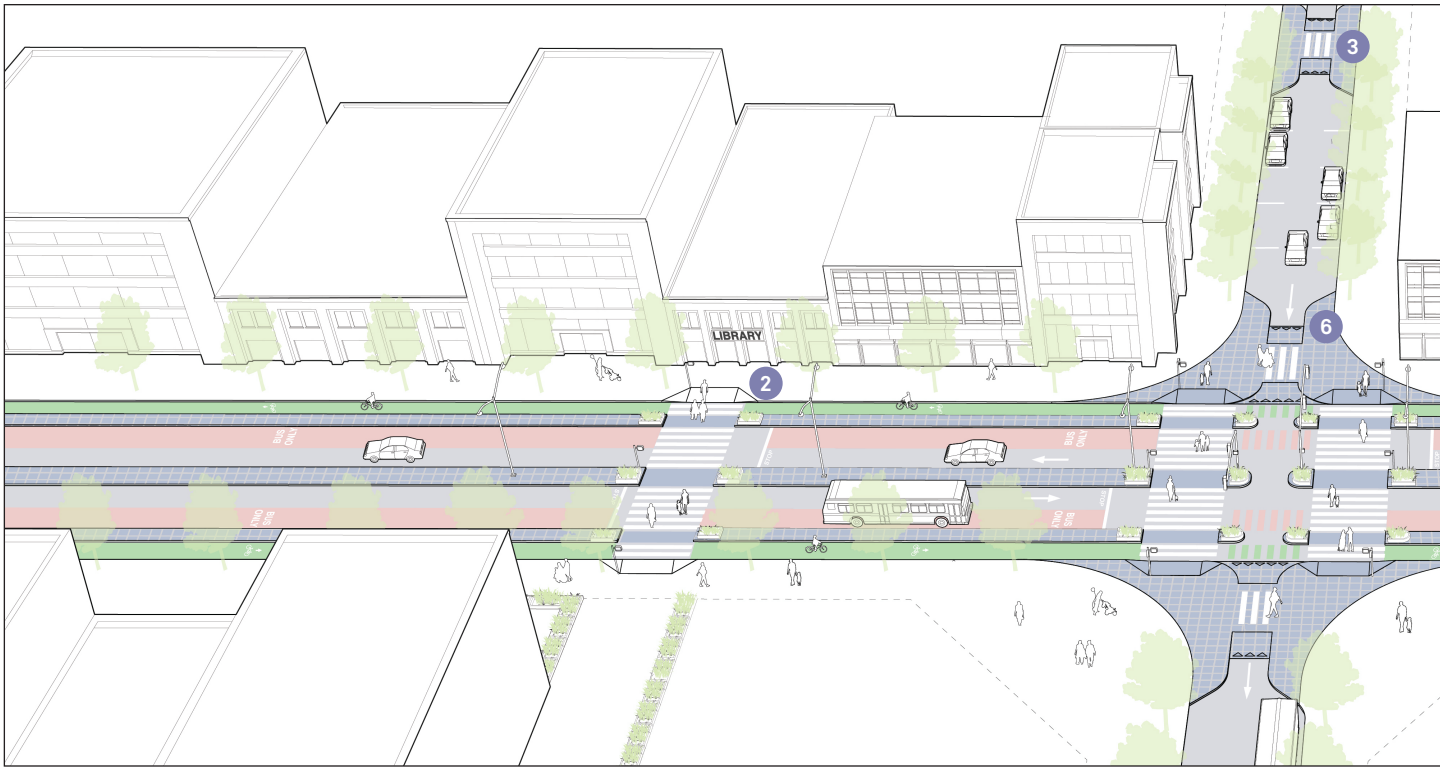
Understanding different functional zones and placement of various streetscape elements is essential to the functioning of city streets. Paying attention to design details can greatly improve children's mobility and experience on streets. Sidewalk clear paths, accessibility treatments such as pedestrian ramps and raised road beds, seating, play elements, trees and landscaping, transit stops, trash cans, pedestrian crossings, and cycle infrastructure enhance the public realm when implemented in concert with each other.

Consider how each element relates to or encourages play, learning, and social interactions. Think about the height of a young child and how an element will be viewed and interacted with from that perspective. Consider that children will often use elements in ways that are not intended or expected by adults, testing their limits or using their imaginations; this is a positive part of their cognitive development.

# 5.1 | **Pedestrian Crossings**

Pedestrian crossings are a fundamental component of a safe, continuous pedestrian network. To support safety and comfort for all users, crossings should be frequently spaced, clearly marked, at grade, and as short as possible. When designing pedestrian crossings, special consideration should be given to children and people with limited mobility.

Young children may move at slower speeds and cover less distance in the same amount of time as able-bodied adults. They can be harder to see and, therefore, may be more vulnerable at intersections that are hotspots for traffic crashes. *For more information, see Global Street Design Guide Chapter 6.3.*




### 1 Short crossings and compact intersections

Shorter crossings are safer and can be achieved by designing compact intersections. Tighten turning radii, widen sidewalks, or provide curb extensions to reduce overall crossing distance. On roads with three or more travel lanes, provide pedestrian refuge islands as a safe place to wait between streams of traffic. Refuge islands should be at least **1.8 m** wide, and ideally **2.4 m** wide, to allow people with children, strollers, and wheelchairs to stand together. Ensure that a median tip protects waiting people from turning vehicles.

### 2 Alignment and frequent spacing

Crossings should ideally be placed every **50 to 100 m** in pedestrian areas with high volumes to ensure a permeable walking network. In urban settings, crossings should be no more than **200 m** apart. Crossings should also be placed to align with key destinations and pedestrian desire lines. Where possible, align crossings to the clear path of the sidewalk.

### 3 Traffic calming

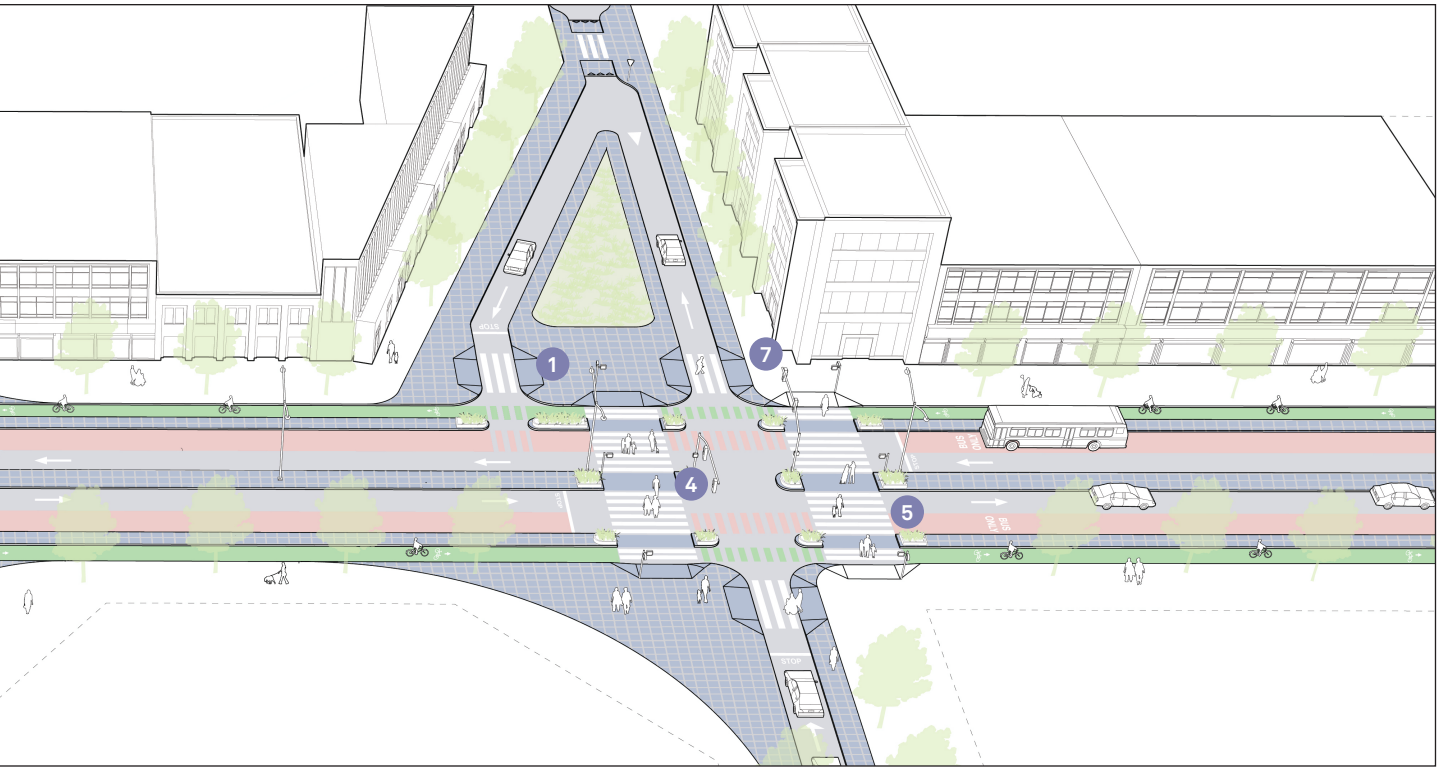
Traffic-calming strategies such as speed bumps, speed tables, and raised crossings should be applied to reduce speeds of approaching vehicles near unsignalized crossings and in areas with high volumes of children and caregivers.

### 4 Legible

Crossing markings should be bold and clear, prioritizing high-visibility ladder and zebra markings. Add aligned tactile surfaces that indicate the end and start of the sidewalk for people with visual impairments. In some cases, brighter colors and fun patterns can be incorporated when combined with traffic-calming measures as long as they do not encourage kids to stop on the road bed. Crossing markings should be at least **3 m** wide, and wider in areas with high pedestrian volumes.

## When designing crossings, consider:

Daylighting | At-grade crossings | Alignment and spacing | Timed signals | Traffic calming




### 5 At-grade and accessible

All crossings should be accessible by a pedestrian ramp. Crossings should be provided at-grade, or raised to match the sidewalk level, supporting a short and convenient path for kids. Align pedestrian ramps with crossings, clear paths, and ramps on the opposite side of the sidewalk. Avoid underpasses and pedestrian bridges as they reduce accessibility.

### 6 Visibility and daylighting

It is critical to ensure that kids can both see and be seen by people driving or cycling. Prohibit parking within **6 to 8 m** of intersections, add curb extensions where possible, place stop bars at least **3 m** from crossings, and minimize visual obstructions within **3 to 5 m** of crossings.

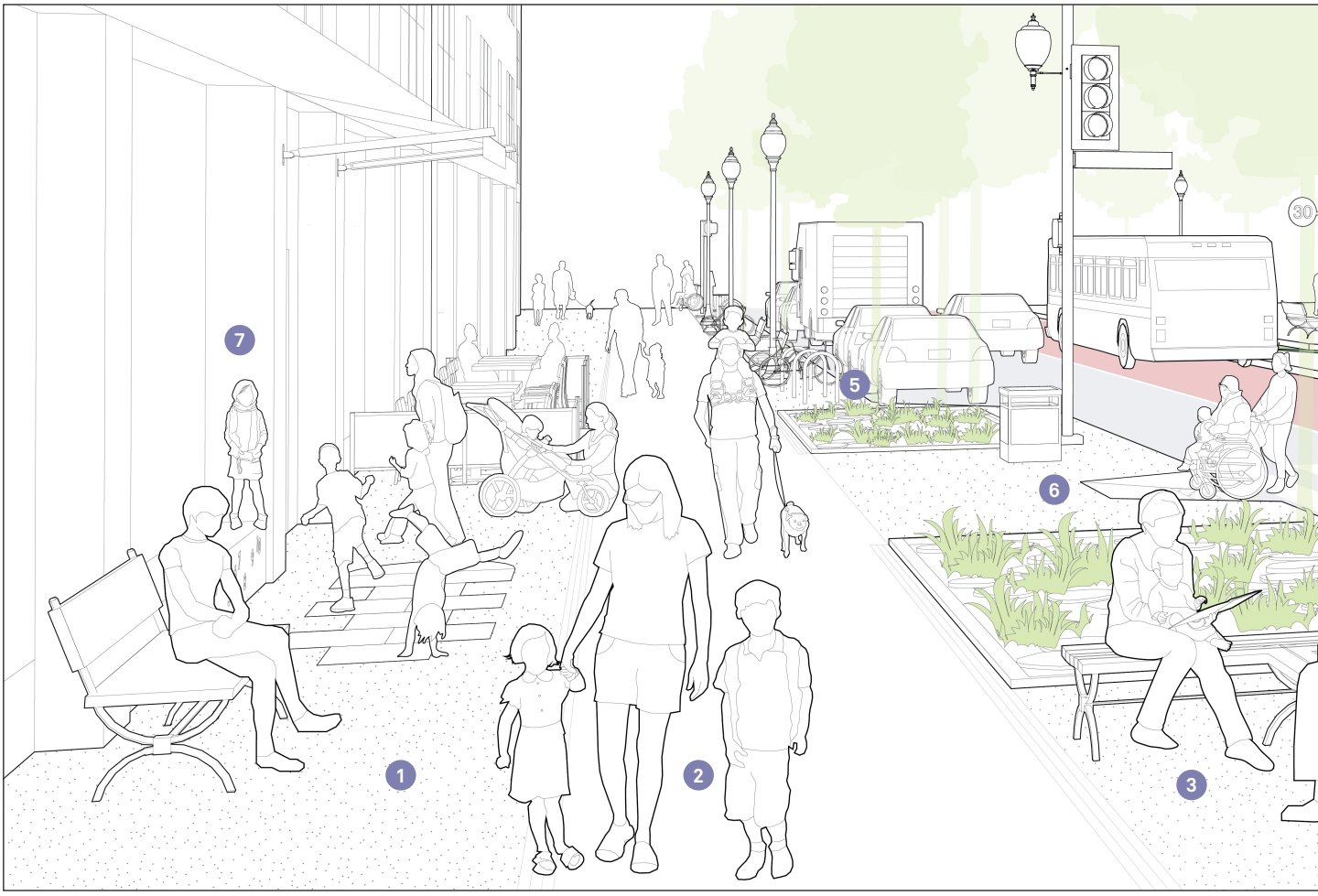
### 7 Signals

Provide additional clearance time to allow people moving at a slower pace or large groups of children to traverse the distance **(0.5 m per second)**. Provide signals where vehicle speeds are above **30 km/h** and pedestrian volumes and crossing demands are high. Countdown signals display the number of seconds remaining in each phase and improve predictability.

Accessible signals should have both audible and vibrotactile walk indications. Pedestrian movement should be prioritized, and pedestrian waiting times should be kept below **40 seconds**. Leading Pedestrian Intervals (LPI) are one option to give pedestrians a head start over turning vehicles, making kids in crossings more visible to motorists.

# 5.2 | **Sidewalks**

Sidewalks are the foundation of the transportation network for children and caregivers. Their design should reflect their use as both a right-of-way for movement and as a public space where children spend a large portion of their days. Well-designed sidewalks have a clear path that meets accessibility and pedestrian volume needs. A high-quality sidewalk has enough space for several people to walk side by side or in small groups. Sidewalks should provide enough room for conversation and play to coexist with movement. Safe and comfortable sidewalks are well-lit at night and have inviting building edges, shaded places to rest and walk, areas for play and socializing, and wayfinding systems.




### 1 Frontage zone

The frontage zone is the section of the sidewalk that functions as an extension of the building. The frontage zone is the space immediately adjacent to the building. This space is ideal for pause and play spaces. It varies in width, but should be at least **0.5 m**. An active frontage zone improves the safety and comfort of the sidewalk.

### 2 Clear path

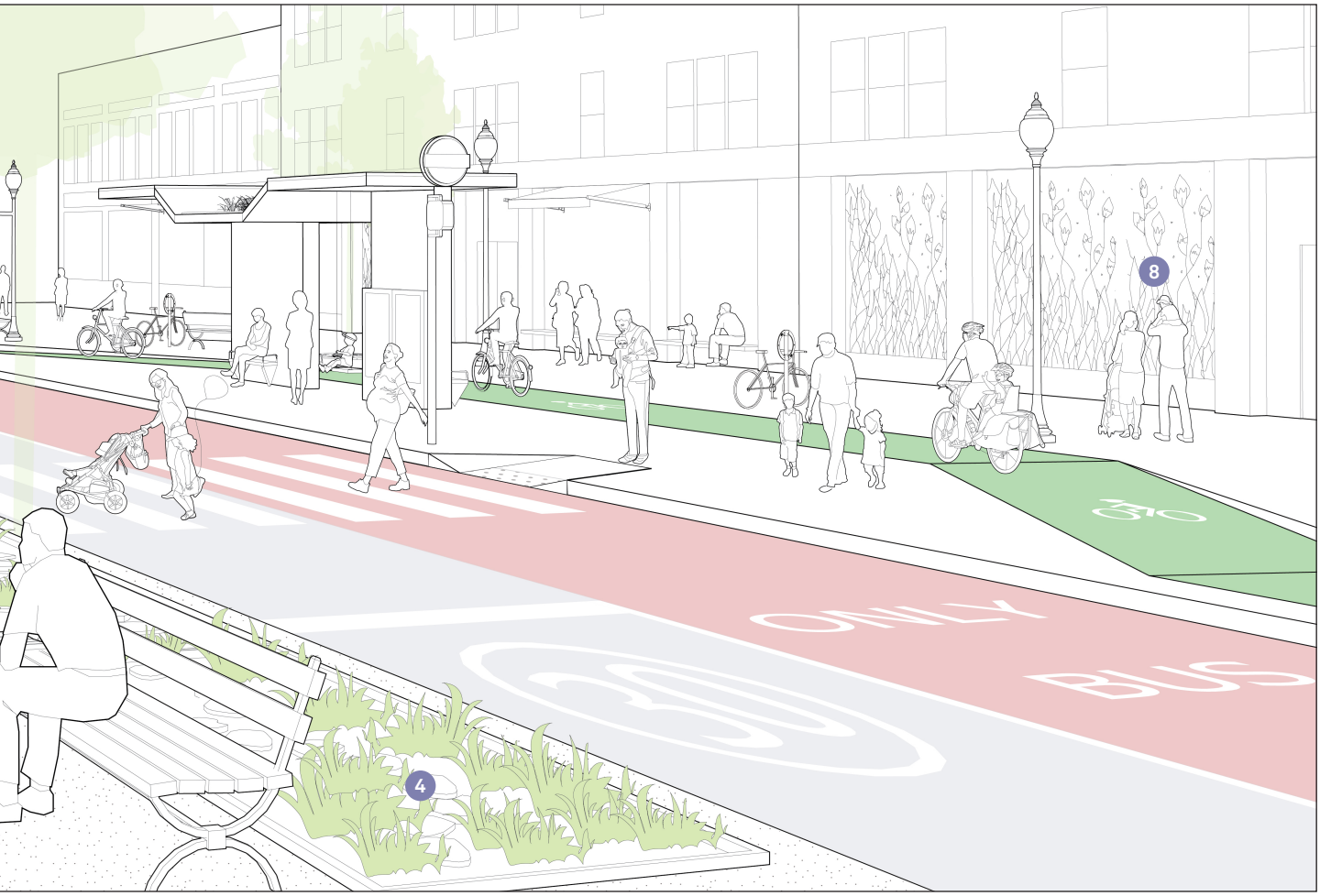
A clear, unobstructed path for pedestrian movement should be wide enough to accommodate several people walking side by side, including children, people in wheelchairs, and people with strollers. The clear path should be at least **1.8–2.4 m** wide in residential settings and **2.4–4.5 m** wide in downtowns, school zones, or commercial areas with heavy pedestrian volumes.

### 3 Street furniture zone

This zone acts as a buffer between pedestrians and cycle lanes, parked cars, and moving vehicles. Without blocking the clear path, it provides space for amenities such as benches, lighting, cycle parking, kiosks, and play and learning elements. This zone is ideal for adding trees, planters, and landscaping to provide shade, opportunities to interact with nature, and a sense of enclosure to the street.

### 4 Buffer zone

A buffer zone serves to separate pedestrians from the road bed, protecting them from moving traffic and increasing the distance from air pollution. Its presence may allow children to walk independently. This zone often contains utility poles and lighting. If the sidewalk is not wide enough, furniture and buffer zones may be combined.




### 5 Curbside

The curbside is adjacent to the sidewalk. It provides space for cycle lanes, parked cars, transit stops, boarding, curb extensions, and parklets. Consider different types of buffers in conjunction with curbside management strategies that include purpose-based zones, time limits, and pricing strategies. Cluster transit stops, cycle parking, and cycle-share stations for seamless transfers.

### 6 Pedestrian ramps

Install pedestrian ramps at every pedestrian crossing and change of level. They should be built of non-slip materials and have a maximum slope of **1:10 (10%)**, ideally **1:12 (8%)**. These ramps are critical for people in wheelchairs and pushing strollers. They should be aligned perpendicular to the pedestrian crossing.

### 7 Active facades

Design for frequent entrances, small lot sizes, and varying ground-floor uses. Facades and storefronts should be designed to cater to the eye level of pedestrians, including children's varying heights. Transparency adds visual interest and invites more natural surveillance. Permeable, rather than closed, metal shutters on storefronts help to sustain visual interest at night.

### 8 Engaging surfaces

Murals, puzzles, games, and 2- and 3-dimensional artwork on or near facades encourage children to play and interact with building edges. Use textures and imprints in sidewalks and other horizontal surfaces. Try to engage all senses. Elements that incorporate acoustics, mirrors, shadows, and light play can be incorporated into all ground and building surfaces.

# 5.3 | Pause and Play Spaces

It is important for urban streets to function not only as platforms for efficient and comfortable mobility but also as public spaces. Pause and play spaces are necessary when kids and adults need to eat, rest, get changed, socialize, be distracted, or calm down. If they are designed well, these spaces can include playful and educational elements and invite social interactions and engagements. These spaces will make caregivers with children feel more welcomed and included in the choreography of the city. When there are spaces to accommodate their needs, they will feel able to participate in urban street life. From tiny pockets of space to spend a few seconds to seating areas that invite families to sit and enjoy a restful break, these places to pause, sit, and stay can aid the health and emotional well-being of children and caregivers.

## INCLUDE INFORMAL AND FORMAL SPACES

Pause and play spaces can be informal, such as nooks or building setbacks, or formal, such as seating, parklets, and plazas. These spaces can accommodate activities like feeding or changing a diaper, made easier with privacy and shade.

## CO-LOCATE SPACES

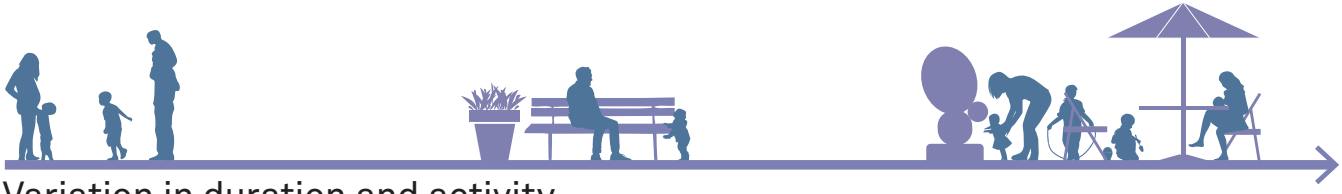
Locate pause and play spaces near schools and other facilities for kids, or in places where kids visit with caregivers, such as transit stops, markets, and grocery stores.

## DESIGN FOR SOCIAL INTERACTIONS

Consider opportunities for elements that can spark conversations between children, caregivers, and passersby. And remember that play is for everyone, children and adults.

## INCLUDE EDUCATIONAL OR FUN ELEMENTS

Pause and play spaces engage kids in learning, encourage play, provide distraction on a journey, and fill waiting times.[1]



Variation in duration and activity



Helsinki, Finland



New York City, USA



Lima, Peru

## PAUSE

These are places along the street to pull over and spend a few moments, see to a quick task or activity, observe something, or play on the go. Pause spaces are not designated for a specific use.

These are spaces such as small pockets and nooks along building edges; clear areas near crossings, between trees, near columns or utility poles, and out of the sidewalk clear path.

## SIT

These are dedicated spaces along the street to sit, rest, or take a break. They improve the comfort of a journey for kids and caregivers.

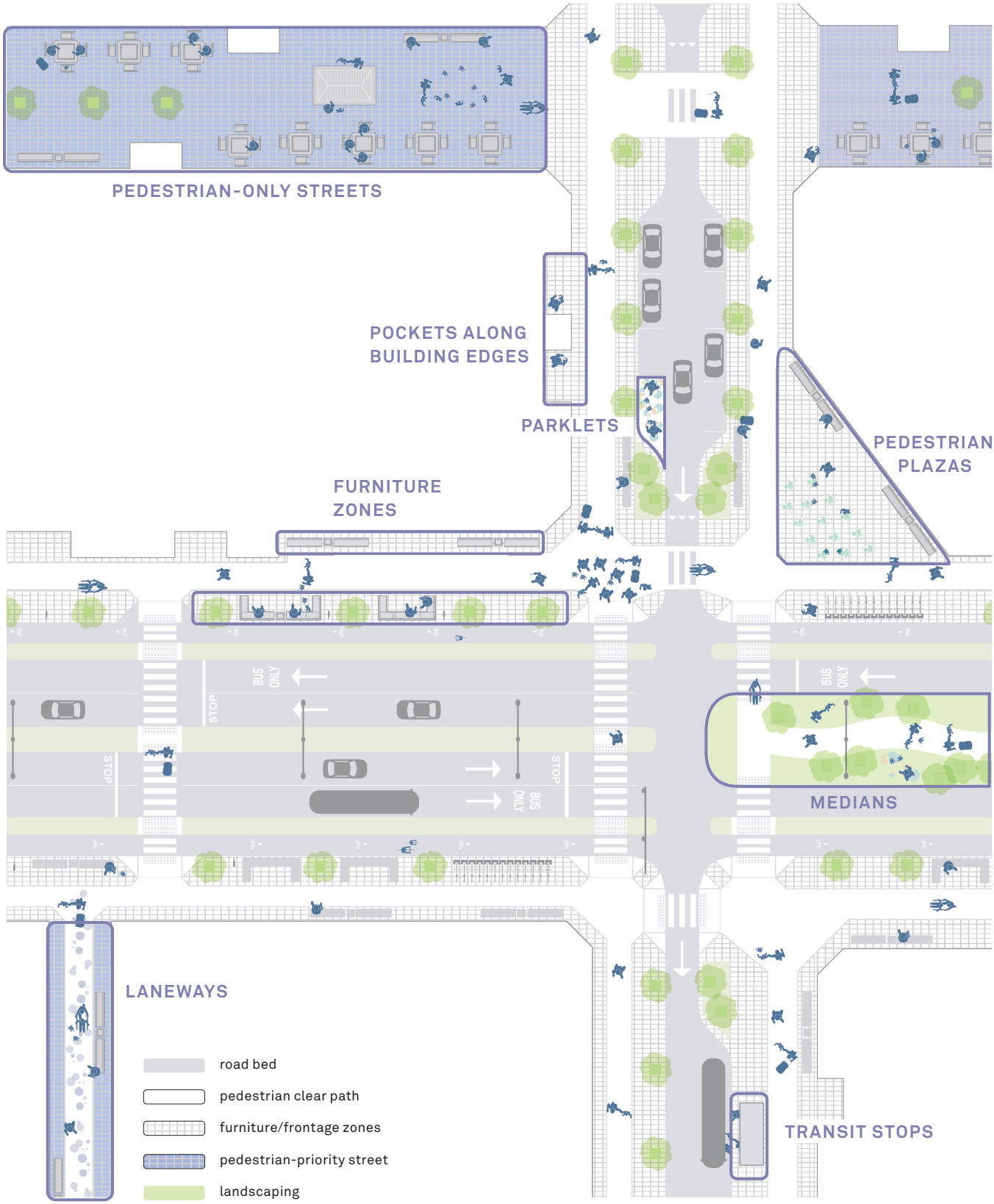
These are spaces such as seating in front of building ground floors; benches along sidewalk furniture zones and along edges of walls, stairs, and parklets.

## STAY

These spaces within streets, or full streets themselves, act as destinations and invite kids and caregivers to spend more time there. They accommodate a vast array of activities and can act as neighborhood hubs for socializing and playing.

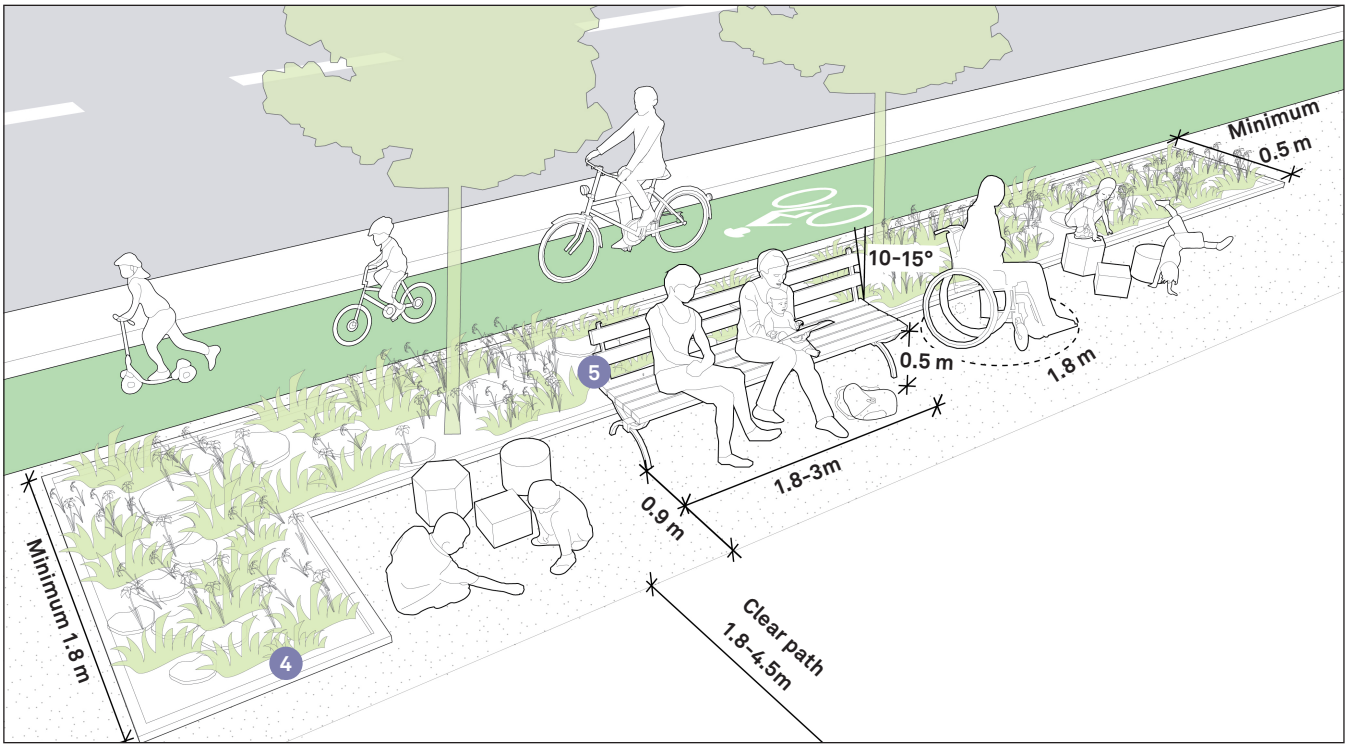
These are spaces such as pedestrian plazas, pedestrian-only streets, shared streets, wide sidewalks, and central medians.

## Potential locations for pause and play spaces



# 5.4 | **Seating**

Providing seating and street furniture gives children and caregivers places to rest, wait for transit or friends, or pause on a journey. The placement of benches and seating can also encourage socializing among both children and caregivers, providing them opportunities to meet or talk with others. Informal socializing is critical to children's interpersonal and emotional development, and ways to feed this growth can be built into urban streets for relatively low costs through means like street furniture.




### 1 Use appropriate dimensions

For seating to be comfortable and accessible, seats should be **0.5 m** high and have armrests and back support at a **10- to 15-degree** angle. When possible, include child-sized elements and install benches longer than **3 m** to provide seating choices and encourage social interactions. Always allow space for wheelchairs, strollers, or nearby flexible seating to be pulled up adjacent to fixed seating.

### 2 Install enough seating

Consider the total linear length of seating or total number of seats to adequately serve expected pedestrian volumes. Install seating along every block, ideally providing opportunities to sit or pause every **50 to 100 m** along a street.

### 3 Consider a variety of locations

Provide a mix of seating opportunities in both sun and shade. Consider proximity to key destinations, play spaces, and street corners. Provide opportunities for caregivers to watch children playing nearby. Ensure that seating and leg space do not obstruct the clear path, are not too close to adjacent travel lanes, are well lit, and are placed on each block.

### 4 Incorporate art and play

Consider developing seating designs that incorporate shapes, forms, and colors that invite play and interaction from kids.

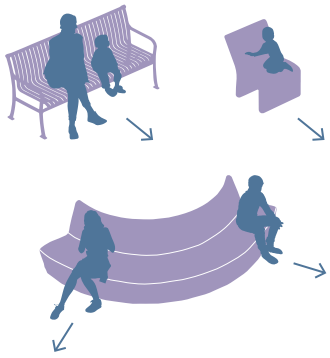
### 5 Use varied materials

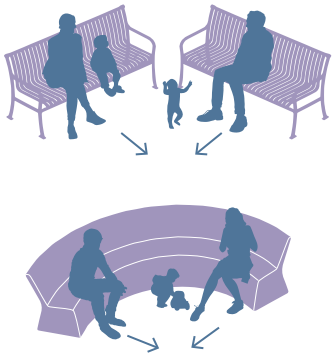
Choose designs and materials that can be easily maintained or repaired and that fit with the local climate. Consider water drainage, wear and tear, and metal temperatures in very hot or cold climates.

### 6 Consider unexpected uses

Kids will use design elements in unexpected ways, such as climbing on or hiding under a bench. Consider designs with rounded edges or guards that prevent tripping.

## Types of seating









Copenhagen, Denmark



Milan, Italy



New York City, USA

### FIXED INDIVIDUAL SEATING

Typically placed in a linear configuration in a sidewalk's furniture zone, these seats should provide frequent opportunities for children and caregivers to sit and pause.

Individual seating is important for adolescents, who sometimes prefer more privacy, and new parents that need to feed an infant.

Fixed seating should not interfere with entrances to buildings, heavily used loading zones, and other potential conflicts.

### FIXED SOCIAL SEATING

When placed to create corners, concave shapes, or small "rooms," fixed seating can allow for larger groups of children or families to sit together or invite social interaction among strangers.

Place social seating near key destinations with large groups of pedestrians such as schools, parks, and hospitals. Install in the furniture zone of wide sidewalks, plazas, shared streets, and pedestrian streets.

### FLEXIBLE SEATING

Flexible seating is ideal for larger pedestrian spaces, such as shared streets, pedestrian streets, and plazas, where a mix of activities occur. Flexible configurations allow people to move and shift seating to suit their needs, accommodate groups or individuals, access sun or shade, and pick a viewpoint from which to observe other activities or watch kids playing.

Provide seats for a variety of heights and sizes, to accommodate the needs of children of various ages.

To reduce replacement rates, use furniture made of durable materials, and work with local partners to secure furniture at night or when not in use.

# 5.5 | **Play and Learning**

Play is one of the main ways in which children learn and develop in their early stages of life. Play and learning should be incorporated into streets wherever possible, enhancing everyday journeys and augmenting what children learn in formal settings. Play and learning opportunities can be conceived of in new street designs, in large-scale street transformations, or as part of smaller-scale upgrade projects.[2] Look for spaces, surfaces, street furniture, or other elements at various heights as opportunities to incorporate this. Consider textures, materials, paving, color, lighting, wayfinding, and interactive elements, keeping in mind long-term maintenance.

Children learn in different ways, so consider the following types of learning when it comes to working with local artists, community groups, or designers.[3]



### VISUAL LEARNING

Use diagrams, pictures, images, shapes, and colors in artwork to encourage building spatial skills.




### LINGUISTIC LEARNING

Incorporate elements that encourage reading, listening, and speaking. Add prompts to spark conversations between kids and caregivers.




### LOGICAL LEARNING

Include numbers, relationships, equations, and patterns to develop counting and mathematical skills.



### MUSICAL, RHYTHMIC, AND AUDITORY LEARNING

Including music is not always easy in streets, but where possible, consider adding sounds or music at transit stops, in street furniture, or with signals.



### SOLITARY LEARNING

Some kids learn best when they are by themselves, solving their own challenges. Include spaces where kids are able to spend time on their own.



### SOCIAL LEARNING

Children often learn when interacting with other people. Identify opportunities for artwork that encourages social engagement between kids and caregivers, or between children.



### LEARNING FROM NATURE

Many kids learn by observing the world around them. Provide opportunities for interaction with nature, including various materials, textures, colors, and smells.



### KINESTHETIC AND VISUAL LEARNING

Kids learn by doing things, so consider adding elements to entice interaction, develop physical coordination, and provide opportunities for hands-on experiences.

# Where to look for opportunities



Milan, Italy

## GROUND SURFACES

Use ground-surface paving patterns along sidewalk clear paths, furniture zones, or active building edges. Be cognizant of busy pedestrian volumes when inviting kids to pause, prioritizing spaces on either side of the clear path.



São Paulo, Brazil

## VERTICAL SURFACES

Vertical surfaces such as blank building facades or walls and vacant windows can provide the canvas for artwork of various scales. Fences along private property or park edges might offer an opportunity to add color, plants, or artwork to engage kids as they approach these destinations.



Lima, Peru

## LANDSCAPE ELEMENTS

Landscape elements such as planters and tree pits provide a chance for kids to engage with nature.



New Orleans, USA

## LIGHTING

Lighting, including light sources lower to the ground, can be added to various elements. Consider color and shadows.



Moscow, Russia

## STREET FURNITURE

Street furniture includes seating, transit stops, trash cans, and cycle parking. Transit stops, in particular, are opportunities to incorporate play and learning.



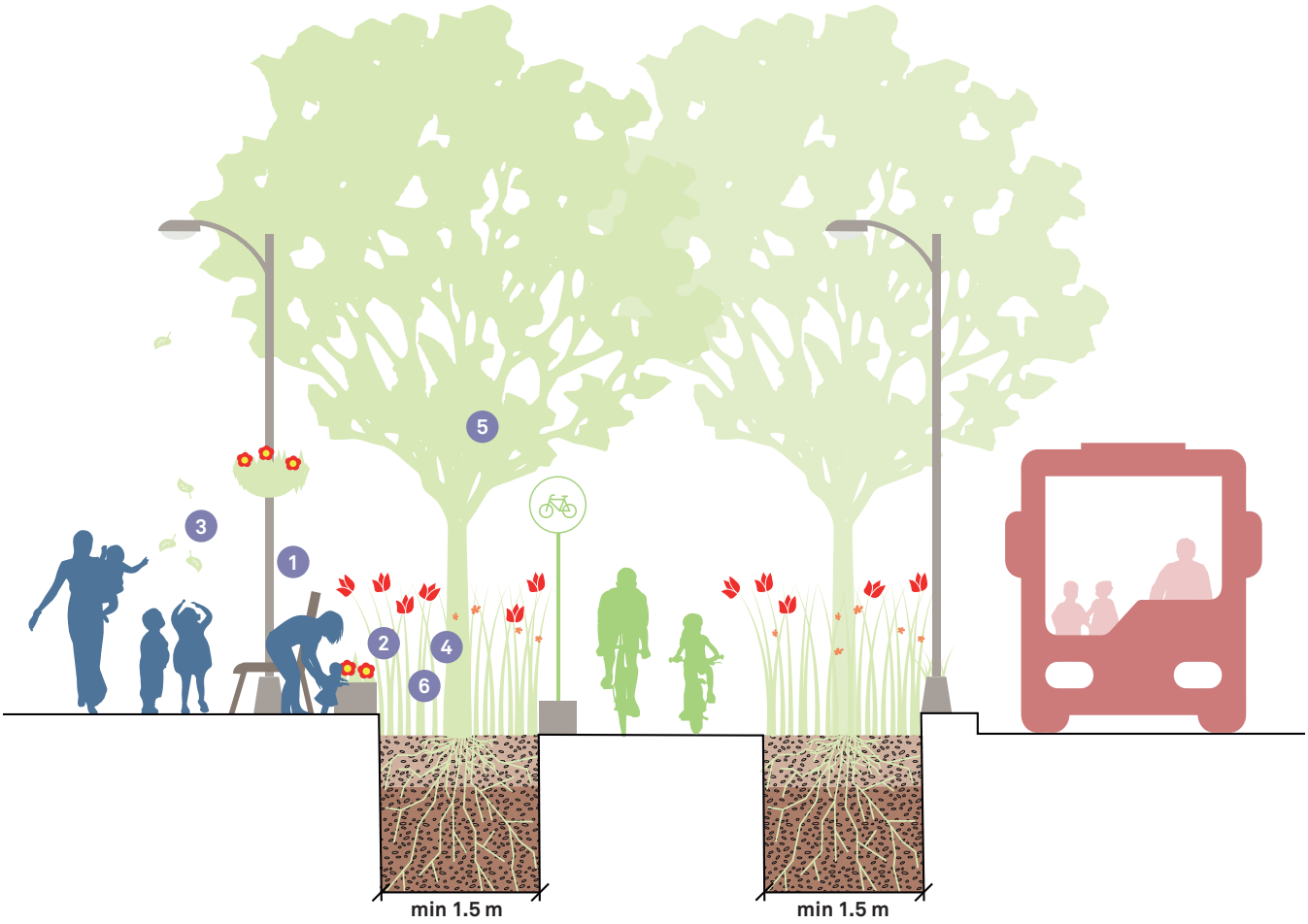
Boston, USA

## UTILITY POLES

Utility poles often set a rhythm along a street that can provide opportunities for engagement.

# 5.6 | Nature and Landscaping

Green infrastructure provides buffer from pollutants in the air and reduces stormwater runoff and heat island effects. In addition, it has added benefits for children and caregivers in urban areas. Numerous studies support this, showing that children with more trees and greenery in their neighborhoods have better brain development and improved cognitive functions, ability to focus, and motor skills. Places with trees also encourage more creative play behaviors. Further studies show that people living with nature nearby had better relationships with their neighbors and felt safer than those with fewer trees near where they live.[4] Additionally, trees also lend shade to sidewalks, cycle lanes, and plazas, which is important in hotter climates. *For more information, see Urban Street Stormwater Guide.*




### 1 Co-locate trees with other elements

Locate trees close to elements like seating and play spaces so that they can provide shade where needed.

### 2 Consider children's heights

Consider children's heights and eye levels when choosing plants. Kids are closer to the ground and will see flowers, grasses, and other low landscaping more closely.

### 3 Allow kids to engage with nature

Adding signs indicating that people may touch the plants informs caregivers that children have permission to do this.

### 4 Consider plant species for kids

Consider plants that attract butterflies, birds, and more. Choose edible, non-toxic, and non-spiky plants, and consider low-pollen species to reduce allergy-induced asthma.

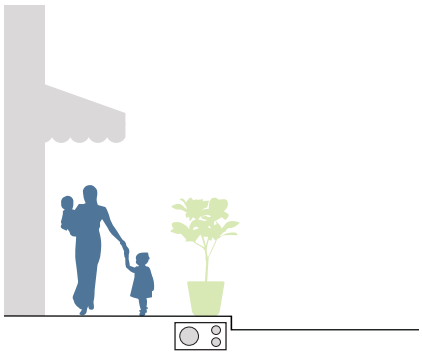
### 5 Plant more trees

Take advantage of larger areas to plant more or bigger trees and landscaping. Consider trees that bloom and provide fruit, and whose leaves change color.

### 6 Build room for insects and spiders

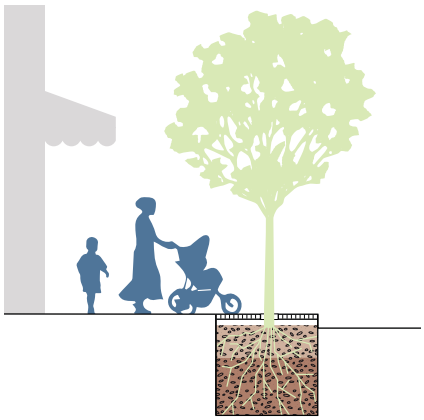
Design insect hotels that provide habitats for different insects and spiders, allowing kids to observe and learn from nature.

## Adding landscaping within site constraints



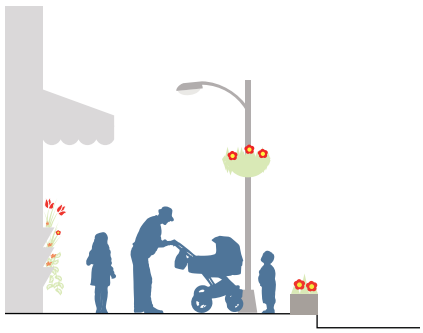
### LIMITED DEPTH OR INTERIM INTERVENTIONS

When landscaping and trees cannot be planted in the ground due to local site conditions, consider using raised planters that maintain the pedestrian clear path. Consider how planter edges can invite children to interact with nature while incorporating seating. For pop-up or interim interventions, use planters to add landscaping and define geometry. Work with local schools and communities to invite kids to participate in the installation and ongoing maintenance.



### LIMITED WIDTH

When sidewalk widths are limited, consider using narrow planting strips in the buffer zone instead of trees. Alternatively, consider walkable tree grates, or tree pit surfaces, that allow space for the tree roots to grow beneath the sidewalk while allowing an accessible clear path—**1.8 m** at a minimum—for pedestrians to walk on the surface. Use permeable materials and ensure tree pits are at least **1.5 m by 1.5 m**. Look for opportunities to remove parking spaces to add trees in the parking lane or as part of curb extensions.



### LIMITED SURFACE AREA

When the ground plane of the street does not provide opportunities for adding landscaping, consider how plants or flowers might be hung on utilities or lights, or how green walls might be incorporated into vertical surfaces along the street.

SNAPSHOT

## Parks Without Borders

**Location:** New York City, USA

**Implementing organization(s):** New York City Department of Parks & Recreation

### OVERVIEW

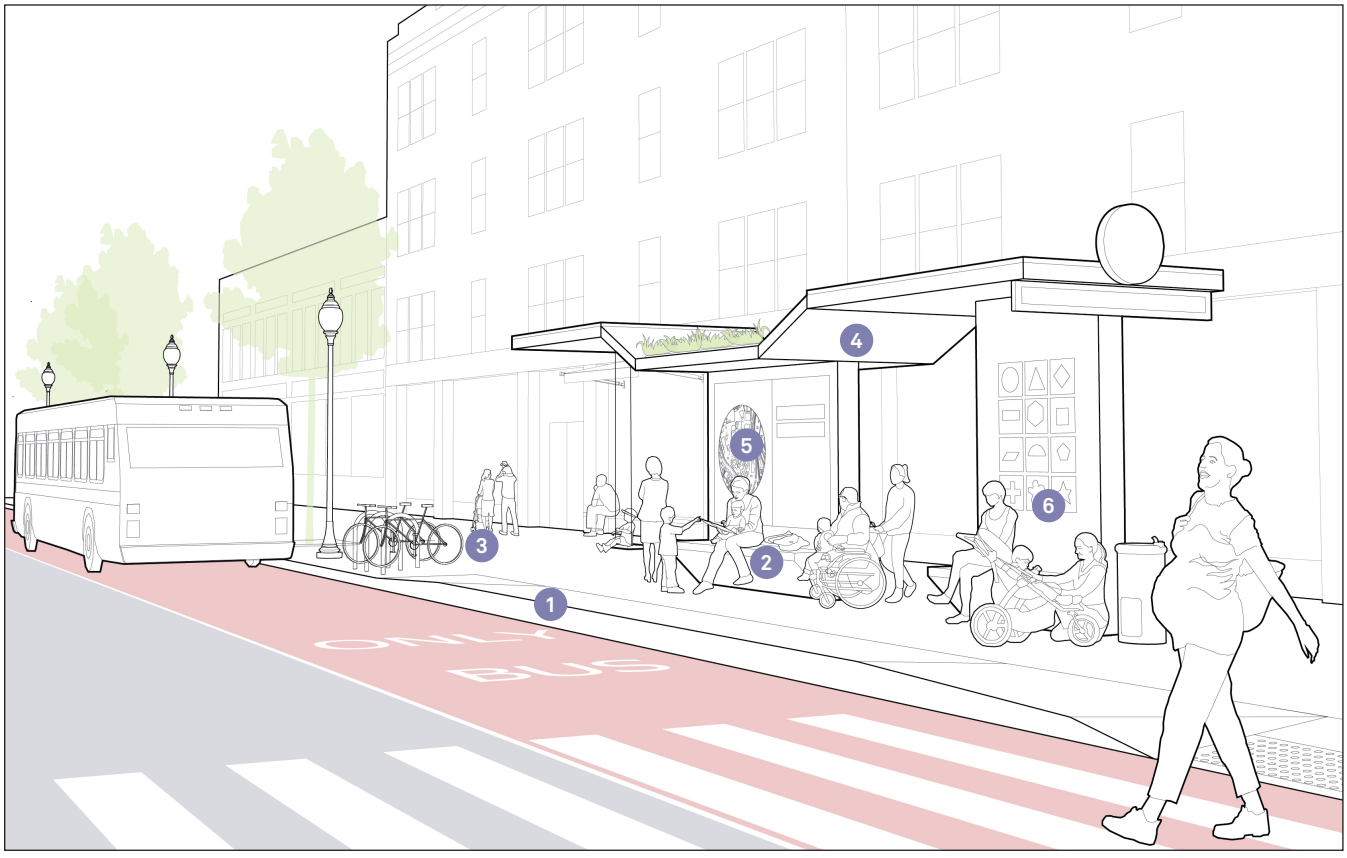
New York City's Parks Without Borders program identifies the sidewalks bordering parks as "outer parks," acknowledging that trees and nature should not stop at a park's boundary. By redesigning the area where parks meet sidewalks, the program reimagines how a park is sited in a community. This also redefined sidewalks as both places for movement and as places to interact with nature.

The program selected several parks around the city and redesigned the borders to include better entrances, smarter seating, less visual obstruction, and a more fluid boundary between the park and the sidewalk.



# 5.7 | **Transit Stops**

Transit is the most efficient way to move more people with limited space. Children and caregivers will use transit most when it is frequent, reliable, and affordable, and designed with their needs in mind. Kids and their caregivers need transit that works for them at the street level as well as onboard transit vehicles. They need transit stops and stations that are accessible and provide them with fun or distraction. Kids often get bored while waiting, and transit stops offer ample opportunities for children's development through space for games, play, and art. This greatly improves both caregivers' and children's experiences while using transit. *For more information, see Transit Street Design Guide.*




### 1 Make transit boarding accessible

Ensure that on-street transit facilities have level boarding, where the platform height matches the floor height of transit vehicles. Alternatively, consider updating vehicle design or making the curb higher.

### 2 Incorporate seating

Seating at transit stops, including child-height seating, provides caregivers and kids places to rest.

### 3 Co-locate street furniture

Elements such as cycle racks, cycle sharing, kiosks, public toilets, drinking fountains, and trash cans should be located close to transit stops.

### 4 Provide shelter

Provide shelter to protect riders from sun, heat, cold, and wind. Ensure that shelters have lighting for nighttime use.

### 5 Share transit information

Clear, accessible, real-time transit arrival times and service announcements make it easier for caregivers to use on-street transit and plan for their childrens' needs while waiting.

### 6 Integrate play and learning

Transit stations and stops can be a great places to pause, sit, stay, and play. Both ground and vertical surfaces are opportunities to include puzzles, games, and artwork that engage kids while waiting for transit.

## Bus Rapid Transit/Metrobús

**Location:** Mexico City, Mexico

**Implementing organization(s):** Government of Mexico City, Council for the Integration of Persons with Disabilities (DIF-CDMX), Institute for Women of Mexico City

**Timeline:** 2013-2017

### OVERVIEW

To improve accessibility on major Bus Rapid Transit lines, physical and operational strategies were implemented to support users such as children, new parents, older adults, and people with disabilities. Pedestrian ramps, warning buttons for boarding, designated space and seating for certain users, level boarding, and bathrooms at stations were added.



SNAPSHOT

## Bus Stops Plan

**Location:** Barcelona, Spain

**Implementing organization(s):** Municipal Institute for People with Disabilities, Barcelona Activa

**Timeline:** 2017-present

### OVERVIEW

Barcelona aims to become a fully accessible city by 2026. As part of this goal, the Bus Stops Plan was developed to look at public bus stops. The city hired people with disabilities to collect data and analyze over 2,500 locations. Some bus stops have already been improved by extending the boarding area with a new modular platform.



SNAPSHOT

## Public Art Bus Stop

**Location:** Vyksa, Russia

**Implementing organization(s):** Buro Druzhba, Fordplast

**Timeline:** 2018

### OVERVIEW

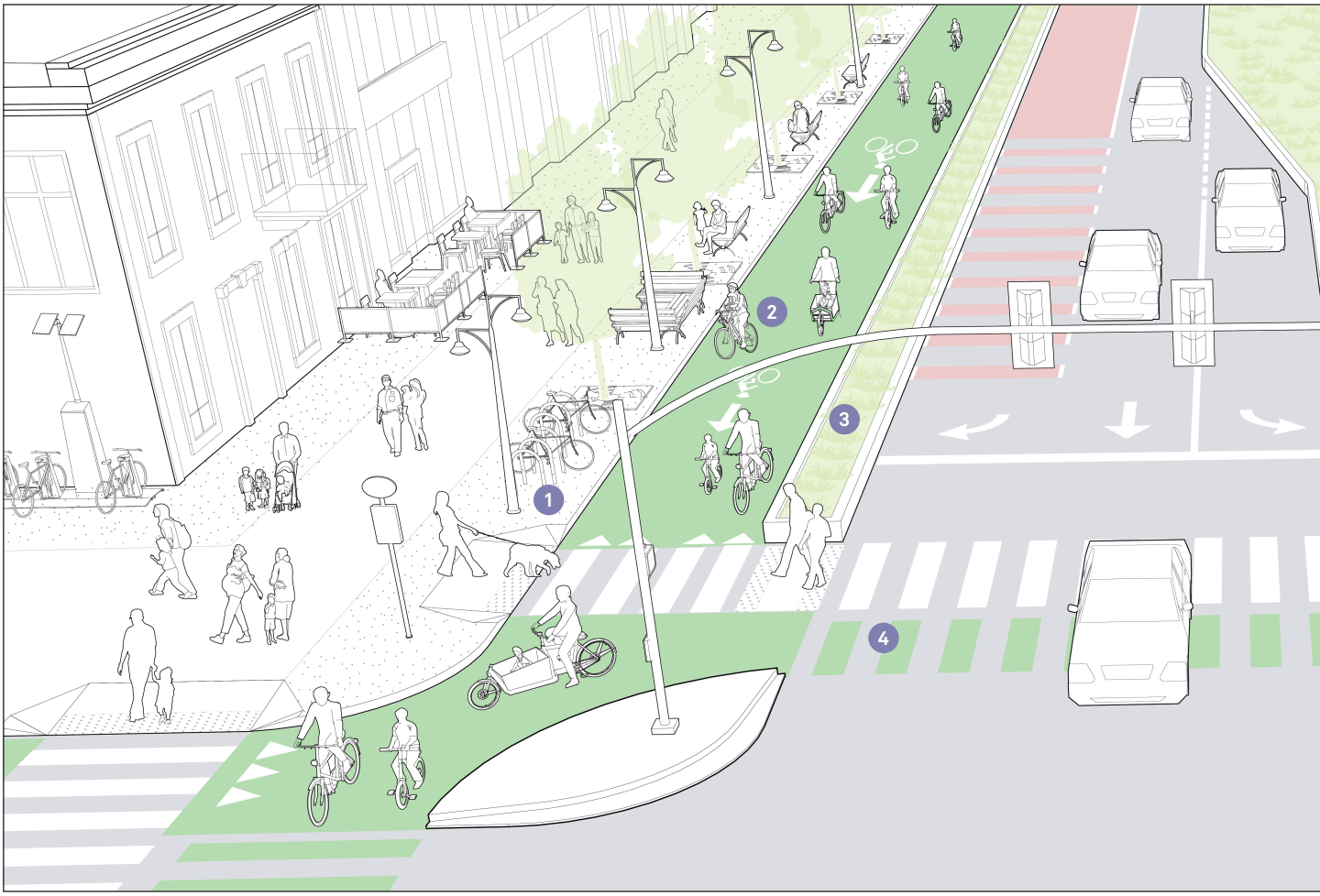
This bus stop is created from large, locally manufactured industrial pipes. It is both a functional transit stop and a public art installation. The stop features USB charging stations, lighting, and a playful sound feature: someone across the street can speak to people waiting at the bus stop through a hidden underground pipe.



SNAPSHOT

# 5.8 | **Cycle Infrastructure**

Cities where cycling is a safe and attractive way to travel are places that serve children's needs. Well-designed cycling networks offer the possibility of independent mobility for young people and add significant freedom for families. Another benefit is that cycling is quieter and has fewer traffic conflicts with pedestrians. A bikeable city has an interconnected network of comfortable, continuous cycleways and low-car-volume streets. Like any mode of transportation, cycling must be seen as safe and convenient before most caregivers and children will use it for regular transportation. *For more information, see Chapter 2.2, Global Street Design Guide Chapter 6.4, Urban Bikeway Design Guide, and Designing for All Ages and Abilities.*




### 1 Curb zone

When adjacent to sidewalks or pedestrian spaces, cycle facilities should be physically separated for the comfort of both pedestrians and cyclists. If cycle lanes are flush with the sidewalk, textures or straight-sided street furnishings help people with visual impairments to distinguish different zones. The curb zone can also host cycle infrastructure elements such as cycle racks, wayfinding maps, and cycle-share stations.

### 2 Cycleway clear path

Cycle lanes should be wide enough for children to cycle beside their caregivers. Side-by-side riding for one child and one adult can be accomplished in **2.2 m** of cycleway clear path, but **2.4 m** is preferable, allowing for social riding. At minimum, the cycle lane should be **1.8 to 2 m** for unidirectional paths, depending on the presence of adjacent curbs, and at least **3.6 m** for bidirectional paths.

### 3 Buffer

The buffer provides a vertical and/or horizontal separation between the cycle lane and motorized traffic or parked cars, providing physical protection and improved comfort for families cycling. Buffers can be marked or colored pavement at the same grade as the roadway with additional vertical elements, or can be raised barriers or curbs. Buffers should be at least **1 m** wide.

### 4 Signs and markings

Road-bed markings provide guidance for cyclists. Yield markings indicate where cyclists are required to stop for pedestrians. Arrow markings and cycle crossings guide movements through intersections. Conflict markings, at driveways or turn lanes, alert motorists and cyclists to potential conflict areas and should differ visually from standard lane markings.

## A comprehensive cycling experience for kids should include:

Protected facilities | Safe intersections | Complete networks




### 5 Corner refuge island

Corner refuge islands provide physical protection for cyclists waiting at or moving through intersections. They prevent vehicles from encroaching on the cycle facility, tighten turning radii to reduce turning speeds, and improve cyclists' visibility to motorists. They can have mountable curbs to allow larger vehicles to turn at slow speeds. Corner islands can also be built using interim materials.

### 6 Cycle signals

Cycle signals improve the safety and convenience of cyclists at intersections. Cycle signals can be used to separate cycle and motor vehicle movements, reducing conflicts with turning vehicles. Signals can also provide a head start for cyclists to move out in front of vehicles, making them more visible.

### 7 Cycle parking

Provide convenient and secure places to park and lock bicycles, including children's and cargo cycles. Cycle racks should accommodate bicycles of different sizes and be located near transit stops and other key destinations and outside of pedestrian clear paths.

### **Also consider:** Raised cycle crossings

Raised cycle crossings improve the visibility of cyclists and reduce the speeds of vehicles crossing the cycle path. Often combined with a raised pedestrian crossing, they improve the rate at which motorists yield to people on bicycles, and have been shown to reduce crashes—especially on two-way cycleways.[5]

# 5.9 | Cycle Facilities

Fully protected cycle tracks are the best type of cycle facility for children and caregivers on major urban streets. While children can cycle in line with motor vehicles on quiet streets with low speeds and volumes, dedicated and protected cycle tracks are necessary for them to navigate larger streets and intersections.

High-volume cycling corridors and those where side-by-side riding is anticipated should provide wider cycle facilities. *For more information, see Global Street Design Guide Chapter 6.4, Urban Bikeway Design Guide, and Designing for All Ages and Abilities.*

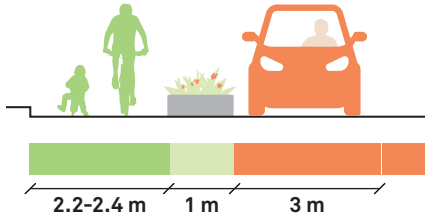
## PROTECTED CYCLE TRACKS

Protected cycle tracks, also known as separated bike lanes or cycle lanes, have both horizontal separation (a buffer) and vertical separation (such as flexible delineators, parked cars, curbs, or by being raised to a higher level) to protect people cycling from motor vehicle traffic and from parked cars blocking the route.

Protected cycle tracks can be used on any street with sufficient width. To create comfortable cycling conditions for people of all ages, protected cycle tracks should be prioritized on any street with at least 6,000 motor vehicles per day, traffic speeds of over **30 km/h**, or multiple lanes of traffic.



Bogota, Colombia




●●●●● **Safety**
●●●●● **Comfort**
●●●●○ **Space**
●●●●○ **Cost**

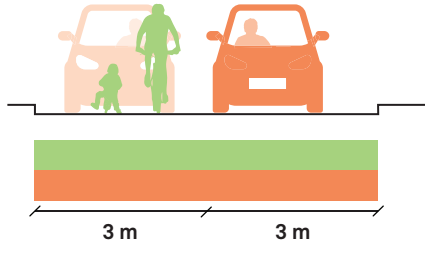
## CYCLE STREET

A cycle street is a low-speed, low-car street that prioritizes cycling and walking.[6] People can cycle on the entire width of the roadway in both directions, allowing comfortable group riding. Cars are allowed on cycle streets, but the street is designed to discourage through-traffic. Partial closures at intersections divert motor vehicles to other streets while allowing people cycling to pass through. Unless the street already has very low traffic volumes, adding vertical and horizontal traffic-calming features further reduce motor vehicle speeds.

Cycle streets should have vehicle speeds below **30 km/h**. They should have fewer than 1,000 to 2,000 motor vehicles per day and fewer than 100 cars per hour. Truck traffic should be low or intentionally limited to local deliveries. Cycle streets should have right-of-way at most intersections to reduce cycle travel time and make cycling competitive for long trips.



Amsterdam, Netherlands




●●●○○ **Safety**
●●●○○ **Comfort**
○○○○○ **Space**
●●○○○ **Cost**

## Cycle share

Public cycle-share systems are a central component of active transportation and significantly improve mobility options for parents and caregivers, who often have complex travel patterns. Cycle-share stations should be frequently spaced, within walking distance (no more than 5 minutes apart), and have a sufficient density (at least 28 stations per 2.6 $km^2$). Stations should be well-lit, complementary to other street elements, and conveniently located near key destinations. Consider providing cycles with children's seats, smaller children's cycles, electric cycles, and dockless alternatives. *For more information, see Bike Share Station Siting Guide.*

### Mini Bicicletar

SNAPSHOT

**Location:** Fortaleza, Brazil

**Implementing organization(s):** Fortaleza City Hall, Unimed Fortaleza, Serttel

**Timeline:** 2017-present

#### OVERVIEW

This program provides 50 children's bicycles with retractable training wheels across five city stations. In the first six months of operation, 6,531 rides were taken. The system is also integrated with the local transit fare card, allowing card users to access these bicycles for free. The program is funded by a contractual clause requiring the sponsor to promote educational activities for cycling.



### BikeMi and Junior BikeMi

SNAPSHOT

**Location:** Milan, Italy

**Implementing organization(s):** Municipality of Milan

**Timeline:** 2008-present

#### OVERVIEW

Milan's cycle-share system, BikeMi, includes 150 bicycles that come equipped with a child seat, which can hold a child up to 20 kg. Helmets are mandatory for children and are provided by riders. BikeMi also had a pilot program, Junior BikeMi, that provided bicycles for children between 6 and 10 years old who weigh less than 40 kg.



# 5.10 | **Additional Elements**

Street elements such as street lighting, trash cans, and wayfinding are essential to making streets safe and accessible. Other elements, such as public toilets, drinking fountains, and Wi-Fi, make moving through cities more comfortable and encourage kids and caregivers to spend time on urban streets. Keep children's heights and experiences in mind when designing and installing these amenities.



## STREET LIGHTING

Street lighting increases safety and provides opportunities for children to play and stay outside for longer hours.[7] Provide a variety of lighting sources and incorporate playful elements such as lanterns, lights at child height, and interactive lighting sources.

Minimize uplighting and glare by using fully shielded (pointing downward) lighting fixtures. Lighting with lower color temperature, also referred to as "warm," is preferred.[8]

*For more information, see Global Street Design Guide Chapter 7.3.*



## WAYFINDING

To help people identify where they are and help them get to where they want to go, use signage, maps, colors, design schemes, and visual cues. Make use of both ground and vertical surfaces. Children benefit from having "landmarks" to associate with their neighborhood, which can vary from manhole design to art installations.



## TRASH CANS

Provide conveniently available trash cans to help maintain a clean and enjoyable pedestrian environment. Place trash cans near corners, vendors, crossings, and parklets, adjacent to clear paths. Promote recycling and separation of trash.

Trash cans can be fun for children, such as ones that playfully encourage children's use. Trash cans at child height allow children to use them but may also encourage children to explore their contents.



Zwolle, Netherlands



London, UK



Los Angeles, USA



## PUBLIC TOILETS

Public toilets are especially helpful for caregivers with children, and can allow journeys to be longer and more comfortable. Ensure that public toilets are conveniently located for use by pedestrians, cyclists, and transit users. Gender-neutral toilets allow caregivers of all genders to safely and comfortably use them with small children. Provide changing tables. Ensure that public toilets are accessible for people with disabilities.

Consider that young children are unable to reach adult-height sinks without the help of their caregivers.



## DRINKING FOUNTAINS

Provide drinking fountains with fresh, potable water to offer sustainable alternatives to bottled water and ensure an essential water source in many communities. Use creative designs to encourage use, and ensure that fountains are maintained to clean and safe standards.

Provide fountains at different heights for use by children and people in wheelchairs. For a fountain meeting universal design standards, the spout should be no more than **75 cm** above the ground.



## WI-FI AND CHARGING

Provide free public Wi-Fi and opportunities to charge electronic devices in public areas. For areas with enough sunlight, charging stations can be solar-powered.




Paris, France



Medellín, Colombia



New York City, USA

C



6 How to Make Change Happen
7 Scaling Up


BURCU
BURCU




Istanbul, Turkey

# 6 How to Make Change Happen

Working toward implementing world-class streets that cater to kids and caregivers requires a multitude of actions. Big-picture, long-term change means setting visions, engaging stakeholders, updating codes and guidelines, and measuring impact. But smaller changes can happen immediately and are important first steps to show what is possible, bring new ideas, and work toward eventual capital projects.

Built work—actual changes to urban streets, such as sidewalk improvements, new artwork and games, added landscaping, or entire street transformations—improves kids' and caregivers' experiences of streets. It signals to them that they matter and are prioritized. This section highlights some of the key steps in the larger process of transforming streets for kids: how to demonstrate a commitment to children and caregivers.

# 6.1 | Build a Plan for Implementation

The steps below can help make cohesive change towards child-friendly streets. These actions can be applied to an individual street design project or to influence a formal citywide action plan. While city governments hold the most power to change the status quo of street design, there are various entry points to instigate the conversation and catalyze change, from nonprofits and foundations to community advocates.



### CROSS-POLLINATE CITY DEPARTMENTS

Street redesign requires actions from different city government departments and services, which are often siloed. It is important to engage these different departments early in the process to work toward the same goal and to connect less-traditional agencies involved such as police departments and educational institutions. Highlight the city's planning and design needs and priorities, and bring evidence that supports investment in street redesign or improvements.



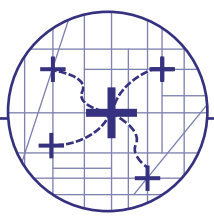
### UNDERSTAND THE LOCAL CONTEXT

While the design principles of creating streets for kids are universal, it is critical to consider aspects of a city's local context. Conditions such as climate, transportation and mode-share, and cultural behaviors will affect the final design and implementation of projects. Gather existing data related to children and caregivers, and make sure to collect site-specific data to inform design decisions. If possible, make this data accessible to city agencies and to the public.



### START WITH A VISION

Set a long-term vision to design safer, healthier, more-beautiful, and more-inspiring streets. Bold and confident statements encourage support from stakeholders and the public, even through challenging times. Each decision, goal, and project should respond to this vision. Set goals that are specific, measurable, achievable, and time-bound, and ensure that budgets align.



### ALIGN WITH EXISTING EFFORTS

Creating great streets for kids requires a holistic approach and alignment with other local projects, programs, or initiatives with similar goals. Work together with other teams to align efforts and resources while scaling up impact. Examples include mobility plans and zoning codes updated to incorporate child-focused planning strategies, new street furniture programs that include designs for children, or school improvement projects that might extend to include adjacent streets.



### GET INSPIRED AND LEARN FROM OTHER CITIES

Look to other cities around the world for ideas for child-friendly projects, programs, and policies. Identify case studies that may be applicable to the project's context or examples that inspire bolder ideas and show what is possible. Copy and adapt these ideas to local contexts as appropriate. Consider how the planning and design strategies behind those projects influenced their success.



### DEMONSTRATE POSSIBILITIES

Consider starting with short-term, pilot, or temporary projects. These are easier to implement, considering time constraints, budgets, and often, building codes and permits. Pilot projects can demonstrate the potential for success, which is a crucial way to inspire demand for child-friendly streets and potentially secure additional funding for permanent construction or scaling up. The temporary or interim nature often reduces a fear of change. *For more information, see Chapter 6.5.*



### ENGAGE STAKEHOLDERS

To build support and long-term commitment for any project, it is critical to identify stakeholders and engage them early and often. These include children, parents, caregivers, community members, experts, politicians, and members of various city agencies. Involving stakeholders can be critical to a project's long-term success: when people feel ownership of a space, they are more likely to use and maintain it, and to act as the local guardians of the space.



### IDENTIFY CHAMPIONS

Find and empower people who can mobilize others, are seen as local leaders, and have the ability to inspire and support change. These individuals might be politicians, business owners, foundation leaders, police officers, engineers, librarians, and others. Most importantly, children themselves can be champions who demand change!



### IDENTIFY IMPACTFUL PROJECTS

Decide on specific project areas based on where the biggest needs for kids and caregivers are, where current investments are being made, and where communities are demanding change. To identify where opportunities are, use both data and open calls to solicit projects. Focusing on the projects with the greatest chance of success and impact can help demonstrate the importance of the work and push forward an overall vision of child-focused streets and cities.



### MEASURE, MAINTAIN, AND PROGRAM

Projects are not over when construction finishes. When planning interventions, consider the time and resources required for post-implementation activities such as maintaining the space, ongoing cleaning, and programming. This is made easier by initial community engagement and buy-in and by developing a maintenance plan with stakeholders. Collect metrics before and after implementation to measure the impact of projects over time.



### SCALE UP AND INSTITUTIONALIZE SUCCESS

There are many opportunities to improve streets for kids. Consider how one-off or smaller projects can be scaled up and institutionalized through formalizing programs, removing policy impediments, allocating funding, building capacity of city officials, and improving guidelines. *For more information, see Chapter 7.*



### TELL YOUR STORY

Share impacts and lessons learned after projects are implemented. Be patient: narratives do not shift overnight, and change is rarely easy. Involve press and media early and often. Ensure that street redesigns are driven by global best practices and data about child well-being. Sticking to the core mission of making better streets for all children can help address and move past criticism.

# 6.2 | **Work Together with Multiple Stakeholders**

Identify project champions inside and outside city government and map out other key stakeholders. Identify the main responsibilities and added value for each stakeholder, and think about the stage in the process where each person can have the most impact. Designate someone in city government to coordinate child-focused street design projects. Help those who work with children to understand the importance of street design and mobility, while letting designers and planners of the built environment know the impact they have on the health and well-being of kids and caregivers.

## Involve stakeholders to:

- Select and analyze sites
- Engage other stakeholders
- Set a project vision
- Plan and design
- Review and approve
- Build
- Maintain
- Manage operations
- Measure and evaluate
- Update policy and regulations
- And more

## Government leaders and civil servants

Street redesign projects require action and collaboration from different city, regional, or national government departments and services, and it is important to connect, integrate, and align their work. Consider appointing dedicated staff or creating interagency working groups to coordinate efforts related to child-focused policies and projects as an efficient way to organize meetings among departments and monitor progress.

### STAKEHOLDERS CAN INCLUDE:

- Construction and public works departments
- Education departments
- Enforcement entities
- Environmental protection departments
- Mayoral and city hall offices
- Parks departments
- Planning departments
- Public health departments
- Sanitation and waste management departments
- Social services departments
- Transit authorities and operators
- Transportation departments and engineers

## Educational and cultural institutions

Children and parents frequent educational and cultural institutions, so these organizations can help build awareness, offer trainings (such as bicycle riding lessons), incentivize mobility choices, and build demand. They also manage physical assets such as schools and libraries, and have a chance to extend improvements to their own facilities into the street. Consider helping them shape syllabi to educate kids and caregivers about sustainable mobility, road safety, and public space design.

### STAKEHOLDERS CAN INCLUDE:

- Academic institutions
- Early childhood facilities (daycares, kindergartens)
- Libraries
- Museums
- Schools
- Sports centers

## Community advocates

Community members have invaluable knowledge about the needs, aspirations, and challenges facing kids on a daily basis. Many communities already work to create safe, accessible, and fun environments for their kids. Engaging local residents early in the process is important to strengthen a sense of identity and belonging and to encourage project buy-in. This will also increase community support during project implementation and help with ongoing maintenance. Consider application-based systems to distribute project funding through grants. This can empower communities to engage in the transformation process and ask for change.

**STAKEHOLDERS CAN INCLUDE:**

- Community centers
- Community groups
- Faith-based groups
- Media and journalists
- Neighborhood associations
- Parent and caregiver groups
- People with disabilities
- Social service organizations
- Youth groups

## Civil society organizations

These stakeholders are sources of information regarding children's and caregivers' needs in cities due to their expertise on local issues. They are also reliable partners for advocating, communicating, and implementing street transformation projects.

**STAKEHOLDERS CAN INCLUDE:**

- Foundations
- Local advocacy groups
- Nonprofit organizations
- Research institutions
- Think tanks

## Private sector

Engaging local businesses as stakeholders in street improvement projects can help gain their buy-in as community members and help activate the space. Look to local businesses, as well as larger corporations, for project sponsorship and other forms of assistance. Identify where and how new developments can improve facilities and streets adjacent to property boundaries.

**STAKEHOLDERS CAN INCLUDE:**

- Corporations
- Developers
- Farmers markets
- Local businesses, vendors, and kiosk owners
- Manufacturers

# 6.3 | Engage Children and Caregivers

While adults must ultimately be held accountable for creating safe urban environments, it is important to meaningfully engage children in the process of shaping streets for them. Consider how children can offer input into local challenges, clarify priorities, and contribute to design solutions. Adjust engagement methods to suit different age groups and situations. Ensure that parents and other caregivers can help to identify priorities for children in their early years with limited communication skills.[1]

## BENEFITS FOR KIDS

Meaningfully engaging children, and allowing them to actively participate as stakeholders, helps them grow into more involved and informed adults. This encourages them to see themselves as community members from an early age. Children who are involved in participatory processes, both with each other and with adults, will feel more competent and confident when engaging with others.

Through engagement and participation, kids improve their self-esteem, find new friends (and potential role models for future careers), learn new skills, and let their innovative ideas shine.



Lima, Peru

## BENEFITS FOR COMMUNITIES

Interacting with children and youth helps to bridge the gap between generations and to understand their real needs. When kids' ideas are taken seriously, it strengthens trust and pride in the community.

Sometimes even great initiatives can get pushback from neighbors. This is a normal part of the process, and more community engagement (including with children) and education can help to overcome these concerns.



Shenzhen, China

## BENEFITS FOR CITY LEADERS AND CIVIL SERVANTS

Key decision makers gain a more in-depth understanding of local issues and the needs of their constituency, which will help them make more-informed decisions. Putting children's needs at the heart of public policy, planning, and design creates not only child-friendly cities but humane and friendly cities for all. On the macro level, it contributes to the United Nations Convention on the Rights of the Child, the United Nations Agenda 21 Action Plan, the New Urban Agenda, and UN-Habitat Sustainable Development Goals.



Valencia, Spain

# General recommendations for the engagement process



## ENGAGE IN ALL STEPS OF THE PROCESS

Children and caregivers should be involved in all stages of the project: planning, design, and policy updates. Involve children and caregivers as partners as a way to better coordinate local government planning with concerned citizens.

Engage parents and communities from the start to build local ownership and ensure that every space is designed based on the needs and wants of the users.[2]

Include children with disabilities, indigenous groups, and other often-marginalized communities, according to the local context.

Allow people to get involved at every stage of the project, and encourage continued participation.



## ASK THE RIGHT QUESTIONS

Ask broad and non-leading questions. For example, ask why and where kids feel unsafe crossing streets, not what design elements to add to make it safe. Use indirect questions when interviewing children and give them the freedom to elaborate as they choose. Ask kids and caregivers how they move and which modes they use in conjunction with the route and length of their journeys to inform how to improve and reduce travel times.



## FOSTER PARTNERSHIPS AND GET BUY-IN FROM THE OUTSET

Build coalitions and partnerships across various disciplines and sectors. This leverages diverse resources and skills to incorporate early childhood development design principles into everyday spaces.



## BE INCLUSIVE AND TRANSPARENT

Reach different groups in the community by using different forms of engagement and meeting them where they are. Consider using different languages, and provide alternatives to digital forms of participation.

Communicate project milestones often. Find strategies to communicate project timelines and to manage expectations.



## CELEBRATE AND ACKNOWLEDGE INPUT

Take time to celebrate and acknowledge everyone's participation. Invite children to attend project implementation and opening, and if possible, allow them to be part of the process, whether it is installing new street furniture, co-creating a mural, or leaving handprints in concrete or paint.

Include kids' quotes in reports and other documents, and share their stories.



## BE ETHICAL

Remember that children have the right to disengage and re-engage, and should not be forced into participating. Consider local context and culture around how children are usually engaged in community efforts such as projects, plans, and decision-making processes. Children need opportunities to self-initiate projects. However, this does not mean that engagement should be exclusive to kids. Try to mix age groups and treat children and adults equally.[3]

Make sure that people who interact with children have had basic training, and create a safe space where children are protected from harm. Ensure that there is a follow-up mechanism for concerns and suggestions from children and their caregivers.

Make sure that children and caregivers consent to voluntary participation in the project and to being photographed. Consider including a signature line for older children along with a parent or legal guardian on the consent form.[4]

Protect any sensitive information about children collected through participation and project analysis.

# 6.4 | Engagement Tools and Methods

Engaging children should be at the forefront of a collaborative approach to designing better streets among all interested stakeholders. However, most cities fall short when engaging children consistently and meaningfully.[5] Below are some ideas for tools and methods that can be used to gather children's and caregivers' insights throughout different steps of the process. There are no one-size-fits-all solutions, and engagement strategies can range from informal conversations, walks, and play to drawings, model-building, role playing, mapping, and photo stories. Consider working with local schools to scale up the engagement and make sure to include different languages in multilingual communities.



### CHILD-TO-CHILD

A E

Older children can help younger children learn about road safety and street improvements through guided walkshops and tours.



### JOURNALING

A E

Encourage kids to keep a journal. For example, ask kids to document how they travel to school, the paths they take, and how long this takes.



### STREET AUDIT

A D E

Do a street audit with children and caregivers. Compare their different perspectives and discuss key challenges and potential solutions.



### PHOTO STORY

A

Ask children to take pictures of places they like and things that need to be improved on their local streets. Share and discuss their findings.



### CHILD-LED TOURS

A E

Children are passionate about the places where they live. Let children lead and show what works and what does not.



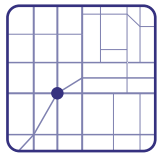
### VISUAL SURVEYS

A D E

Use a visual preference survey to get quick results. Make it accessible for those who cannot read.

Steps in the process:

- A Analysis
- D Design
- E Evaluation



### MAPPING

A E

Help identify and prioritize sites, routes, and mobility areas. Use large-scale maps to document children's environments.



### ART AND PLAY

A D

Use drawings to engage people of any age, especially kids from ages 4 to 11.[6]

Re-purpose materials such as cardboard boxes, straws, toys, leaves, and branches to create models of neighborhoods to use for street design exercises.



### TECHNOLOGY

A D E

Help children co-create with adults, for example by using computer games such as Minecraft or SimCity.

Ask children to report poor road conditions and document their travel to school by walking and biking via gamified apps.



### INTERVIEWS, FOCUS GROUPS, AND SURVEYS

A D E

Conduct interviews and surveys, and organize focus groups before and after project completion. Use these tools consistently to understand where changes are needed.



### CHANGE PERSPECTIVE

D

See a street from a child's or caregiver's perspective to be better informed for a meaningful discussion. This can be through a different eye level (for example, 95 cm, the height of an average three-year-old), pace, safety perception, and more.




### OBSERVATIONS AND COUNTS

A E

Understand how the street is used and who the users are with quantitative counts.

## Pick the right place and time

When planning engagement activities for kids and caregivers, pick locations that are close to the project site and convenient to access. Meet children and caregivers at locations where they already are spending time such as schools, grocery stores, and events.

Consider what hours will allow people to participate, including school and work hours and schedules related to families with small children, teenagers, older adults, and pregnant people. Provide childcare and compensation when possible.

### AT SCHOOL



Milan, Italy

### AT THE GROCERY STORE



Lima, Peru

### AT THE LIBRARY



Vienna, Austria

### AT HEALTHCARE FACILITIES



Recife, Brazil

### AT THE PLAYGROUND



New York City, USA

### AT THE PARK



Thessaloniki, Greece

### AT OPEN STREET EVENTS



Cape Town, South Africa

### ON THE SPORTSFIELD



Vyksa, Russia

### AT COMMUNITY EVENTS



São Paulo, Brazil

SNAPSHOT



## Growing Up Boulder

**Location:** Boulder, USA

**Implementing organization(s):** University of Colorado Boulder

**Timeline:** 2009-present

### OVERVIEW

Growing Up Boulder (GUB) is a program in Boulder, Colorado, USA, that encourages children and youth to join city planning processes with a vision of making Boulder a reference for child- and youth-friendly cities. GUB empowers young people by involving them in processes and projects related to local urban issues, and it allows children and teenagers to influence and deliberate on these matters. Funded largely by the city but housed within the University of Colorado, GUB hires part-time employees to liaise between children and other stakeholders, and to work with children to determine their urban planning priorities and help them voice their concerns to the city council. GUB designs curricula and public engagement activities for young people aged 2 to 18.

SNAPSHOT



## Shenzhen Design Week

**Location:** Shenzhen, China

**Implementing organization(s):** Shenzhen Design Week

**Timeline:** 2018-2019

### OVERVIEW

Children under age 18 were asked to participate in the redesign of a local park by engaging with a model on display during Shenzhen Design Week. The activity was purposely designed to minimize the influence of adults on the children, and parents were not allowed to offer guidance or opinions. Professional volunteers helped guide children when needed, using different techniques for children of different ages: children under 6 were engaged through storytelling and asking questions, children from 7 to 12 were asked to describe their ideas for the park, and volunteers helped children over 12 to more clearly express their design concepts at a higher level. Child representatives will be invited to evaluate the park project once it is completed and used.



## Barcelona City Map

**Location:** Barcelona, Spain

**Implementing organization(s):** Universitat Politècnica de Catalunya, Studio Tridimenciudad

**Timeline:** 2017

### OVERVIEW

Maps can be fun and educational tools to engage children, youth, and adults. People can be asked about where they live, places that they frequently use, or sites they think might be suitable to receive a special project. This large-scale map of Barcelona was plotted and placed in a busy plaza in the heart of the city. Local residents, including children, were invited to draw their daily routes. Through this tool, they were able to share their own experiences, learn from others, and acknowledge important streets and sites highlighted by many people.



SNAPSHOT

## Urban Bandages

**Location:** Brazil

**Implementing organization(s):** RedOCARA

**Timeline:** 2011-2013

### OVERVIEW

Participants were invited to create their own bandages and place them in places on the street that need to be repaired: cracked surfaces, missing ramps or pedestrian crossings, or any other physical element that makes public space less safe or accessible.



SNAPSHOT

## Traffic Agent App

**Location:** Oslo, Norway

**Implementing organization(s):** Agency of Urban Environment, Norwegian Centre for Transport Research, Oslo City Teaching Agency

**Timeline:** 2015-present

### OVERVIEW

The Traffic Agent mobile app allows school children to map their routes to school and to identify and report both positive and hazardous places along these routes. For example, if bushes have grown to block sight lines or restrict movement, reporting this can lead to same-day trimming. The app was created in 2015 and engages over 43,000 children to identify and report hazardous places. Children's input is valued because of their different perspectives and knowledge of traffic. This resource is supported by funding for interventions and is an effective tool to encourage physical changes in neighborhoods where children live or go to school.



SNAPSHOT

# 6.5 | **Demonstrate Possibilities**

Challenging the status quo can be difficult, and it may be hard for people to imagine their streets differently or to convince them that change will bring positive impact. Demonstrating what is possible can help cities and practitioners build support for their projects. Pop-up and interim transformations are opportunities to move from ideas to practice, test design strategies, and identify quick wins. These projects can be powerful ways to quickly demonstrate how streets can bring safer mobility and play while building support for long-term change.

## Effective strategies to demonstrate what's possible



### GIVE SPACE BACK TO PEOPLE

In many places, kids do not have opportunities to play safely in public spaces. Therefore, removing or reducing vehicles can be a powerful way to show how streets can be used by children to play immediately.

Consider pop-up and interim transformations as a means to gain support for a permanent change. These interventions alone should not be used as a substitute for permanent or long-term space or facilities for children and caregivers.

Focus on the final goal and select interventions strategically.

Children may be the first ones to occupy a transformed space. Kids, caregivers, and families quickly realize the hidden opportunities of transforming streets and reclaiming space for walking, socializing, and play.

### GET PARTNERS ON BOARD

Pop-ups and interim transformations require multiple partners and buy-in from the local community. Designers and engineers from city agencies should contribute to the design and evaluation of the intervention. Just as important are local civil society organizations, universities, advocates, and community members, including children, who can help plan and implement interventions.

Champions from city agencies can help by planning the process, identifying best strategies to get timely permits, and identifying opportunities for pushing boundaries.

Plan launch events where key stakeholders—from high-level politicians to local residents, including children—are invited to attend and use the space. Invite media to spread the word about the success of the project.

### IMPLEMENT QUICKLY AND AT LOW COST

Use cones, chalk, paint, and moveable furniture such as beach chairs and planters. These changes can be done overnight by city professionals and community members. Testing street designs as real-life simulations can be an effective and efficient way to make design decisions and achieve consensus among city agencies.

Pop-ups and interim transformations can be more successful by including programming. Consider music, dance, and other performances; classes and workshops; open air cinemas; food vendors; and other engaging and fun activities.

### MEASURE AND MAKE THE CASE

Use data and anecdotes to communicate a project's success and gain support from the public and from key stakeholders.

Set appropriate indicators for analyzing baseline scenarios and post-intervention data. Monitoring and evaluating both the process and the physical transformation will offer valuable input for future projects.

### MAINTAIN AND MANAGE

Streets require ongoing maintenance and management. Identify who is taking care of planters, street furniture, and other amenities and where they are stored.

### ITERATE AND SHARE LESSONS LEARNED

Build in an iterative learning process so that each location can continue to adapt and evolve based on the latest, most robust evidence emerging from practical experience and ongoing scientific studies.

## Common tools to create successful pop-ups and interim projects

- **CHALK AND PAINT MATERIALS**
- **SEATING, CHAIRS, TABLES, UMRELLAS, ETC.**
- **GAMES, PLAYABLE STRUCTURES, AND TOYS**
- **CONES, FLEX POSTS, AND CURB STONES**
- **PLANTS, PLANTERS, AND TURF GRASS**
- **PROGRAMMING SUCH AS MUSIC, WALKING TOURS, AND HEALTH CHECK-UPS**

SNAPSHOT

## Cidade 2000

**Location:** Fortaleza, Brazil

**Implementing organization(s):** City of Fortaleza, State of Ceará, NACTO-GDCI, World Resources Institute

**Timeline:** 2017, 2019-present

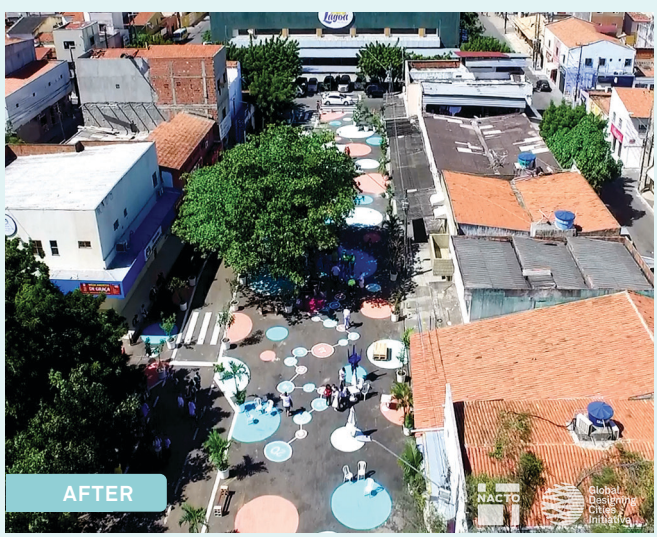
### OVERVIEW

As part of the plan to implement a low-speed zone in the Cidade 2000 neighborhood, Avenida Central was completely transformed over two nights. More than 1,200 $m^2$ of underutilized parking spaces was reclaimed as a new plaza where people can walk, sit, and spend time together. A narrow travel lane preserves local access for motor vehicles, allowing for delivery of goods, pick-up and drop-off, and some parking. Three new pedestrian crossings were introduced, giving clear priority to pedestrians. Together, these measures encourage vehicles to move at safer speeds and enhance safety and comfort for all street users.

In the new square, children have a place to play, neighbors of all ages and abilities have new benches where they can sit and talk, cyclists have a safer route to ride, and local businesses have new customers. Immediately after the transformation, the number of children playing in the area more than doubled. A vast sea of asphalt became the new heart of the neighborhood.

An intervention was trialed for 15 days, and a local business owner started a petition to make it permanent. The petition collected many signatures and the mayor approved the permanent transformation with capital improvements. The project catalyzed a citywide public space program.



SNAPSHOT





## Coxe Avenue

**Location:** Asheville, USA

**Implementing organization(s):** Street Plans, City of Asheville, Asheville on Bikes, Blue Ridge Bicycle Club, AARP, Sound Mind Creative

**Timeline:** 2018

### OVERVIEW

Over the course of 4 days and with the help of 60 volunteers, a 0.5-km-stretch of Coxe Avenue in Asheville, North Carolina, was transformed into a safe, accessible, and functional space for all users. This intervention tested solutions for pedestrian and cyclist safety in the corridor, including 6 new pedestrian crossings and a multi-use path protected by parking and barriers. Additionally, a 550 $m^2$ mural was installed on a block that is sometimes closed to vehicular traffic for events. The mural makes the space feel more like a plaza than a street and helps further activate the space during events.

This pilot project was intended to last for a year to inform the city's long-term redesign of Coxe Avenue. Metrics collected after the redesign show that the project reduced speeding by half.

SNAPSHOT



## Leefstraten: Living Streets

**Location:** Ghent, Belgium

**Implementing organization(s):** City of Ghent, Lab van Troje

**Timeline:** 2012-2017

### OVERVIEW

Leefstraten, or "Living Streets," were created to help the City of Ghent plan and implement permanent physical changes in streets. To test different street geometries, layouts, and parking schemes, the city temporarily closed streets for multiple weeks. These interventions were planned and implemented through collaborative efforts between the city, Lab van Troje, local residents and groups, and companies. Each Living Street is designed and implemented in a different way. Signs and fences block vehicular access. Many use artificial grass to reclaim the road bed. Planters, movable furniture, and play equipment created opportunities for families to rest, meet, and play. Some Leefstraat communities plan events and additional programming to attract users and unveil unexpected possibilities.

# LeGare Intersection

**Location:** Addis Ababa, Ethiopia

**Implementing organization(s):** Addis Ababa City Roads Authority; Traffic Management Agency; Transport Programs Management Office; Traffic Police; Ethiopian Institute of Architecture, Building Construction, and City Development; NACTO-GDCI

**Timeline:** 2016

## OVERVIEW

In partnership with five city agencies and three local academic institutions, NACTO-GDCI conducted a pop-up intervention at LeGare intersection as part of a capacity-building session to train local stakeholders on street design strategies and metrics collection. The intersection geometry was transformed using chalk, string, and plants borrowed from a local nursery. Lanes were aligned to shorten crossing distances and lower vehicle turning speeds. The successful one-day trial helped gain support from local officials to pursue a six-month interim intervention to collect more metrics. Later that year, a longer-term design was implemented.

The interim transformation used 750 liters of paint and 120 planters to reclaim nearly 2,000 $m^2$ of public space and installed four new pedestrian crossings. Adding median refuge islands and curb extensions reduced pedestrian crossing distances: a single 50-m crossing became two shorter crossings of under 10 m each with a refuge space in between.

Simple design interventions can change the way pedestrians, cyclists, and motorists interact with the street environment. Before the intervention, LeGare provided little space for pedestrians and encouraged speeding, but the redesign caused motor vehicles to move more predictably and gave pedestrians safe spaces to cross and rest.












# 6.6 | **Temporarily Open Streets for Kids**

Even when interim geometry and operational change is not possible, there are ways to give streets back to kids and caregivers. Temporarily closing streets to through-traffic and opening them to people creates opportunities for play and social interactions, strengthens intergenerational community ties, reduces air and noise pollution, and increases safety. When this occurs frequently, the use of streets for play can be incorporated into regular routines.

## Play streets

Temporarily close streets to through-traffic in residential neighborhoods during specific hours during weekdays or weekends in order to create a playspace for children.

In some cities, play streets can last for weeks. Play streets allow for local residents to spontaneously occupy the streets and do not require additional programming.[7]

### STREET SELECTION

Select quiet neighborhood streets that do not have transit routes. When possible, streets should not be selected by a government authority but requested by residents.

### EQUIPMENT AND AMENITIES

Provide "loose parts" for unstructured play, such as cardboard boxes, fabric, balls, and chalk. Extra seating and shade is helpful, but residents often bring their own chairs, umbrellas, and toys.

### PERMITS

Permitting fees and insurance costs can be an obstacle to bringing more play to areas in need. Consider simplifying the permitting process, granting seasonal permits, and waiving fees.

### FREQUENCY

While play street events can be a one-off, regular street closures are better. Plan six to eight weeks ahead, as permits take time. Play streets can be range from two to three hours to a full weekend.

## Open streets

Temporarily close large streets or a network of streets in central areas to through-traffic.[8]

### STREET SELECTION

Consider closing longer stretches of streets (some open streets span beyond 30 km of street closures). Select streets that benefit multiple neighborhoods. Engage transit authorities in street selection.

### EQUIPMENT AND AMENITIES

Provide seating, shade, water, and restrooms. Engage local businesses to set up stalls along the route.

### CYCLES

Allow cyclists to ride through temporary closures at walking pace, yielding to pedestrians. Events that follow longer routes should actively encourage cyclists by providing dedicated space and amenities.

### FREQUENCY

Ideally, open streets occur every weekend and are all-day events. If the program is shorter, allocate hours in the morning to ensure that children and older adults can enjoy a less busy route. Plan for more participants during afternoon hours.

## School streets

Temporarily close streets to through-traffic around a school during drop-off and pick-up hours.

### STREET SELECTION

Select streets near schools that have a high volume of children and higher exposure to air pollution due to traffic.

### COMMUNITY SUPPORT

A local petition can help build support and make a case. Work with local businesses and residents to prevent potential pushback. Ensure parents and local communities are given advance notice.

### EQUIPMENT AND AMENITIES

Street closure may require only traffic agents, cones, and signals.

### FREQUENCY

Set times and days around school schedules, usually Monday to Friday for an hour each at drop-off and pick-up times.

SNAPSHOT

## Playing Out

**Location:** United Kingdom

**Implementing organization(s):** Playing Out, local authorities

**Timeline:** 2009-present

**Type of temporary street closure:** Play Streets

### OVERVIEW

Playing Out is a UK-wide, parent-led movement for children's freedom to play where they live. A successful first Playing Out session, organized by parents in a South Bristol neighborhood in 2009, quickly multiplied to five other streets in the following year. The idea spread to other cities in the UK and was covered by media, resulting in over 300 inquiries from residents and councils across the country by 2012. In the same year, Bristol City Council established a play street policy. Other cities have since started to support this type of program. This great demand for play streets was elevated by a Bristol University study that found these sessions significantly increased time children spent playing outdoors.

The organization Playing Out has created tutorials and supporting documents to empower local communities to create their own play streets, including videos; manuals; templates for posters, letters, and other relevant documentation often needed from applicants to a city council. Playing Out shares stories of successful initiatives, features a map of ongoing projects, and sells toolkits with stickers, vests, posters, ropes, chalk, and other useful materials to use in a Playing Out session. It also offers information to help local city councils to start their own programs. By April 2019, over 900 street communities across 74 local authority areas had organized regular Playing Out sessions, directly benefiting 27,000 children. Playing Out hopes that the growing parent-led play streets movement will cause a widespread cultural and policy change, restoring playing out as a normal part of life for all children.





SNAPSHOT




## Box of Play

**Location:** Los Angeles, USA

**Implementing organization(s):** Los Angeles Department of Transportation, Kounkuey Design Initiative

**Timeline:** 2015-present

**Type of temporary street closure:** Play Streets

### OVERVIEW

The Los Angeles Department of Transportation and design firm Kounkuey Design Initiative (KDI) had an ambitious goal: to transform neighborhoods into places of play for people of all ages while improving community cohesion, safety, and public health. As part of the process of developing a Play Streets pilot for Los Angeles, KDI worked with local communities to design and create a Box of Play. This box contains movable furniture and games for residents to use during Play Street events. One of the portable design pieces, the "wobble," can be used in a variety of ways. The design concept is to not only offer objects with pre-assigned uses, but also to encourage the community to tailor the objects to their needs and imaginations.

During the project, the KDI team helped set up an online application system for communities to apply for Play Streets. Through this process, communities get the Box of Play and assistance with permits, insurance, and programming.

SNAPSHOT



## Saturday Night Mobile Playground

**Location:** Hanoi, Vietnam

**Implementing organization(s):** Think Playgrounds, HealthBridge Vietnam

**Timeline:** 2015

**Type of temporary street closure:** Play Streets

### OVERVIEW

Ha Noi's Old Quarter neighborhood lacked play spaces for local families until the Saturday Night Mobile Playground began. The project banned vehicles from the street and created a temporary, mobile playground. As part of a pilot project created by a local team of architects, the initiative brought equipment made of bamboo and recycled materials, chalk drawings, and traditional games, such as bamboo jacks and stilt-walking. The Saturday Night Mobile Playground was held for 11 nights and attracted over 4,000 visitors, half of which were children. After the pilot, the program was handed over to the local authority, the Youth Union, and the community to operate for one year. Based on the success of the initiative, the district government pedestrianized nearby Hoan Kiem Lake to offer additional play opportunities for local families.

SNAPSHOT

## Paulista Aberta

**Location:** São Paulo, Brazil

**Implementing organization(s):** SampaPé, Minha Sampa, São Paulo Municipality, and others

**Timeline:** 2015-present

**Type of temporary street closure:** Open Streets

### OVERVIEW

Paulista Avenue is a 2.7-km-long and 48-m-wide street with stations for three subway lines, and serves over 1.5 million pedestrians per day. A network of civic groups in São Paulo organized to demand vehicle-free Sundays to transform this vehicle-centric street into an iconic space for people. A successful pilot day in 2015 laid the groundwork for future vehicle-free days, and since 2016, the street has been opened to people every Sunday and holiday from 10 a.m. to 6 p.m. People use the reclaimed space for cultural and recreational activities such as performances and sports. The open street's popularity has also paved the way for new local policies. In São Paulo, the program has spread to streets in multiple neighborhoods.




SNAPSHOT

## School Streets

**Location:** Across Europe

**Implementing organization(s):** Various

**Timeline:** 1990s-present

**Type of temporary street closure:** School Streets

### OVERVIEW

European cities devised a solution for improving safety during school drop-off and pick-up: School Streets prohibit vehicles outside schools during opening and closing hours. The initiative began in Bolzano, Italy, and has been replicated in many other cities in Europe, including Vienna and Edinburgh.

Signs inform streets users about restricted hours, and agents block street traffic. This simple but effective measure improves road traffic safety and encourages a shift to more sustainable modes of transportation. In many cases, the number of children walking and biking to school increased while fewer caregivers drove children to school. School communities, including teachers and parents, also reported improved air quality and less noise, which makes journeys to and from school more enjoyable.




TOUCHDOWN



Barcelona, Spain

# 7 Scaling Up

Designing streets for kids goes beyond one-off street transformations and temporary events. It requires scaling up and making street improvements part of citywide programs and policies. These can be achieved by embedding and institutionalizing best practices and allocating budgets for long-term sustainability across changes in political administrations. To sustain change when today's best practices become standard practice or the new status quo, city agencies and other organizations and stakeholders should align their efforts to work toward an overall vision of a child-friendly city—a city for all people.

# 7.1 | **Take a Comprehensive Approach**

Implementing and sustaining a long-term approach to street design that prioritizes kids requires a comprehensive effort that involves multiple agencies and stakeholders working closely together. Invite key decision makers to place kids' health and well-being at the center of their work, whether they are shaping policies, programs, or physical projects. Setting a strong, long-term vision for putting kids first and ensuring that resources are allocated to achieving this vision will help different stakeholders know what they are responsible for in the short term.







# Replace Vehicles with Public Space

**Location:** Pontevedra, Spain

**Implementing organization(s):** City of Pontevedra

**Timeline:** 1999-present





## OVERVIEW

Pontevedra's leaders believe that creating a child- and family-friendly city is best done through comprehensive urban planning, and that a city that prioritizes pedestrians is a city that is good for children and families. In Pontevedra, 80% of children between 6 and 12 years old walk to school without an adult. This was the direct result of long-term efforts that aimed to deprioritize motor vehicles in urban planning and to improve families' safety and well-being. The policies, programs, and physical improvements carried out by the City of Pontevedra were also inspired by the work of Francesco Tonucci and his initiative, City for Children ("La Città Dei Bambini" in Italian).

The urban transformation started in 1999 with the pedestrianization of the downtown area and was gradually expanded toward the river and other major destinations, such as transit hubs. Much of the downtown area is pedestrian-only or shared streets. Most on-street parking has been removed, and underground garages have been built around the city center.

The transformation has so far reclaimed 669,000 $m^2$ previously dominated by motor vehicles and is ongoing. Additionally, some streets in Pontevedra have been upgraded with traffic-calming measures, raised pedestrian crossings, enhanced lighting, accessibility improvements, or new street furniture.

The comprehensive plan includes cycling, where the city also implemented a cycle network, and transit. Metrominuto is a map similar to a transit-route map that shows distances and walking times between major destinations, and is placed on bus stops.

Pontevedra's Safe Routes to School program, "Camino Escolar," encourages children to walk to school without caregivers and bears the motto "The city takes you to school." Local businesses, identified by stickers near their entrances, give support to students when needed.

The citywide speed limit of 30 km/h was set in 2010, and it is encouraged through street design.

## KEY STRATEGIES

**Upgrade:** Roads, sidewalks, plazas, roundabouts, and other public spaces were upgraded with new paving and pedestrian infrastructure.

**Protect:** Citywide speed limit was set at 30 km/h.

**Reclaim:** Many streets in the city center were made pedestrian-only or shared streets; many parking spaces were removed.

## IMPACT

Increase in youth population despite Spain's low birth rates: the population of children under 15 has increased by 8%, compared to 2.4% in the nearest large city, Vigo, proving the popularity of street transformations and aligned policies and programs.

Increase in independent, active mobility for children: 80% of children 6 to 12 walk to school without caregivers, up from 9% in the 1990s. (This figure was also 80% in the 1970s.)

Increase in active commutes: 65% of all commutes in 2013 were by pedestrians or cyclists.

Decrease in car usage: since 1999, there are 77% fewer motor vehicles in the inner city ring and 53% fewer citywide.

Decrease in road traffic crashes: there were 784 crashes in 2008, down from 1,200 crashes in 2000.

Decrease in road traffic fatalities: there have been zero fatalities since 2011, down from three between 2007 and 2013 and 30 between 1997 and 2006.

Decrease in $CO_2$ emissions: 66% decrease from 1999 to 2014.

Decrease in crime rates: In 2010, Pontevedra reached its lowest crime rate in a decade, with 34 offenses per 1,000 citizens. In 2017, there were only 27 offenses.

Increase in international recognition: the city has been awarded a number of prizes, including the UN-Habitat Dubai International prize in 2014 and the 2015 Center for Active Design award.

CASE STUDY



# Kids First Program

**Location:** Bogotá, Colombia

**Implementing organization(s):** Mayor's Office, Secretary of Education, Secretary of Mobility

**Timeline:** 2016-present





## OVERVIEW

Bogotá aims to become a sustainable and equitable city with happy residents who can reach their full potential. City priorities include improving mobility and public space, especially for children.

The Kids First program takes a holistic approach, aiming to improve children's daily journeys to school as pedestrians, cyclists, and vehicle passengers. To reduce the risks children face, the city created five projects: pedestrian and cycle caravans (Centipede and Al Colegio en Bici), an educational park (MobilePark), two priority bus lanes, a regular school transportation check-up, and school zones.

The program is part of the Bogotá's Vision Zero policy, adopted by the city through its Road Safety Plan 2017-2026.

## IMPACT

More than 1,000 students have enrolled in Centipede, the walk to school program, since 2018.

More than 1.5 million bicycle trips to school have been made in four years as part of Al Colegio en Bici, the cycle to school program.

Over 1,500 students have learned kind and safe street coexistence from MobilePark, the educational traffic park.

Over 95,000 students taking school buses use priority lanes.

Over 2,900 school zones have been created over four years.

## KEYS TO SUCCESS

Including play and learning: Songs, games, and other teaching elements helped create safe and fun journeys in addition to the technical requirements of transportation projects.

Shared responsibility: Including the broader community creates bonds and improves trust in public institutions. Institutions, schools, and communities have different roles and duties as part of a city's system of mobility.

## LESSONS LEARNED

Children are willing, and actually prefer, to walk and cycle to school instead of taking the school bus because their trips are more enjoyable.

Communities can be actively involved in improving safe environments for children.



# Subprograms

## SCHOOL ZONES

School Zones creates safe street environments and slow vehicular speeds adjacent to educational institutions. Speed limits around schools are 30 km/h, but the design of streets often allows vehicles to achieve higher speeds. To encourage respect for this speed limit, school zones bring speed-calming measures such as curb extensions and increase the visibility of pedestrians and cyclists.



## CENTIPEDE

Centipede Safe Roads initiative aims for safer walks to school, turning them into fun and educational moments that strengthen the social fabric of the community. A monitor ensures safety and leads children through games and songs. By seeing how much their kids enjoy walking together, parents and caregivers are encouraged to become involved.



## MOBILE PARK

MobilePark is a child-sized model, built with mats, that reproduces everyday urban traffic. It is a teaching scenario that can be brought to schools and other institutions interested in showing children from ages 3 to 11 how to navigate safely and use sustainable and safe transportation options. Children act as everyday road users, and specialized teachers from the Secretary of Mobility show them how to safely walk and cycle, how to read traffic signals, and how to interact with other road users.



## AL COLEGIO EN BICI (BIKE TO SCHOOL)

Al Colegio en Bici (Bike to School) is an initiative that promotes cycling as a healthy and environmentally friendly means of transportation for students' travel to school as well as a way to experience their city. Students cycle to school daily with older students, who act as guides and have been trained in road safety, cycling, and basic bicycle mechanics. These guides also organize field trips with students to explore Bogotá and visit museums, libraries, and public spaces.



## SCHOOL BUS LANES

Two projects focus on kids using transit: the Centipede School Lane is a priority lane for school buses, and Ruta Pila is a preventive control strategy that checks the safety and security of buses. These programs aim to make kids' bus journeys safer and more efficient.

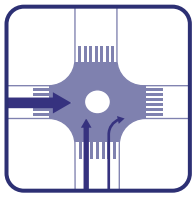
# 7.2 | **Update Policies**

Embedding the well-being of children in local, regional, and national policies ensures that legal and regulatory frameworks prioritize kids and caregivers in the long term. Policies that shape the experience of kids on urban streets include those related to mobility, public space design and access, urban development, planning and land use considerations, and budget allocation. These policies can permit certain practices, require minimum standards to be met, incentivize best practices, provide restrictions, and be updated to remove impediments. Some examples are listed below. *For more information, see Appendix C and Global Street Design Guide Chapter 2.*

## Examples



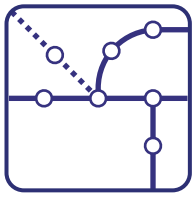
Mandatory mobility plans for schools can be a starting point for scaling up change: they promote active mobility, change infrastructure around schools, and encourage sustainable mobility.



Many cities require traffic impact assessments and road safety audits as part of large infrastructure projects. These requirements can be used to encourage prioritizing children.



Look for opportunities to allow certain uses of the street and to install child-friendly elements or materials. Consider creating specific codes and manuals or create amendments to existing ones. For example, allow parklets in on-street parking zones or allow for stroller parking to be installed on wide sidewalks.



Some cities recognize that children and caregivers use public transit during off-peak hours and redesign transit networks to improve travel time and reliability. Additionally, some cities consider discounted fares for children and students. *For more information, see Chapter 7.3.*



Plans and codes can help encourage private property owners to create great streets for kids. Consider requiring developers, or giving them incentives such as additional floor-to-area ratio, to implement active commercial uses on ground floors or designate open spaces within the lot to add to the existing play and recreational areas in the neighborhood. Other ideas might include encouraging parking and storage for bicycles and strollers.



Recognize the importance of access to key services through sustainable mobility choices and safe, inspiring street design. Incentivize child-friendly business initiatives and connect different aspects of early childhood development policies to include public health, mobility, nutrition, and access to childcare facilities. *For more information, see Chapter 7.3.*

# Vauban Sustainable Urban District

**Location:** Freiburg, Germany

**Implementing organization(s):** City of Freiburg

**Timeline:** 1993-2006

## OVERVIEW

Vauban is a former military base that was bought by the City of Freiburg from the German government. A housing shortage encouraged the city to develop a new neighborhood in Vauban where, in 2017, a quarter of the city's 5,500 residents were under 18.

The project relied on a master plan created through the participation of city agents and a local nonprofit, Forum Vauban, which was founded in 1994 as the official body of citizen participation. To create a family-oriented neighborhood and align with a sustainability agenda, the main design objectives were to create a dense urban fabric; promote low-energy-consumption buildings and public spaces; restrict car usage; encourage walking and biking; and increase access to public transport, high-quality green spaces, and public services. A light rail line connects to the city of Freiburg, and all residences are within 400 m of a transit stop.

To ensure that the neighborhood would be economically and socially diverse, the City of Freiburg considered each potential home buyers' age, occupation, marital status, number of children, and more. The diversity in both people and architecture helps to promote a lively public sphere and improve visual interest and neighborhood identity. Former military barracks were developed into a community center, a center for asylum seekers, and student and social housing.

Specific regulations were put in place to support these goals:

- On-street parking restrictions on residential 4-m-wide streets, called "Stellplatzfrei" play streets; vehicular access is allowed at walking speed
- Less than 0.5 residential parking spaces per unit and at least one cycle parking space per unit
- Four- or five-story residential buildings
- Green spaces near housing to ensure play opportunities
- Retail and services along the main road
- Parking in multi-story garages on the periphery; limited on-street parking






## STRATEGIES

**Protect:** Created low-speed shared streets

**Activate:** Purposefully planned diverse ground-floor uses to create a rich and active public life

# 7.3 | Integrate Land Use and Mobility

Daily routines are impacted by how far away key destinations are from home, their proximity to other destinations, and transportation options available to reach them. A carefully coordinated approach between policy, transportation planning, density, and land use should be applied in each neighborhood. Ultimately the goal is to create a city comprised of interconnected, compact neighborhoods.[2]

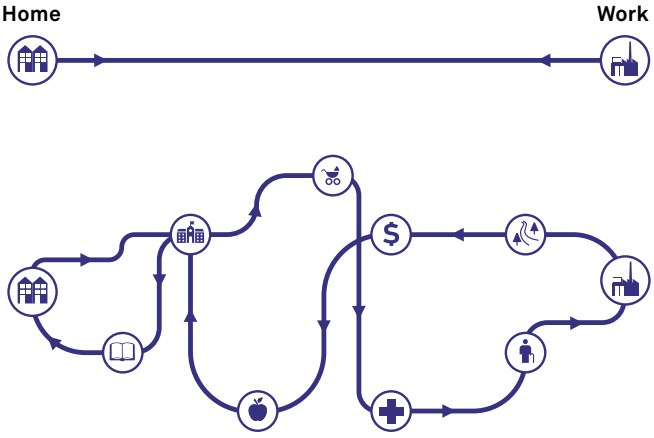


## PLAN 15-MINUTE NEIGHBORHOODS

A 15-minute neighborhood is a neighborhood where all basic needs and services are accessed by a 15-minute walking, rolling, cycling, or transit trip from home or from a key destination such as a school or a public plaza. Kids and caregivers need regular access to places such as childcare centers, schools, parks, playgrounds, healthcare facilities, and stores.

Minimize the time needed and maximize mobility choices to access daily goods and services. Identify opportunities for how kids and caregivers can safely access frequent destinations within 15 minutes using convenient and efficient mobility options.

Develop policies that ensure that any new neighborhood developments allow residents to access the majority of their key daily destinations within a 15-minute travel time through coordinated transportation and land use planning.




## ASSESS PLANNING DECISIONS WITH CHILDREN AND CAREGIVERS

Traditional planning for urban transportation services and streets often considers a limited set of trips made each day. Commute length and transportation mode generally cater to predictable daily commutes using one or two modes of transportation, with a single destination and few stops.

For caregivers and children, a typical daily journey often looks very different compared to other street users. They may have varied schedules from day to day, stop at multiple destinations, and use multiple modes of transportation, often while carrying heavy loads. This requires more careful consideration when planning to equitably serve all communities.

Engage kids and caregivers to understand their perspectives and implement their suggestions in neighborhood and transit network planning and redesign.



## IMPROVE EXISTING STREETS AND MOBILITY

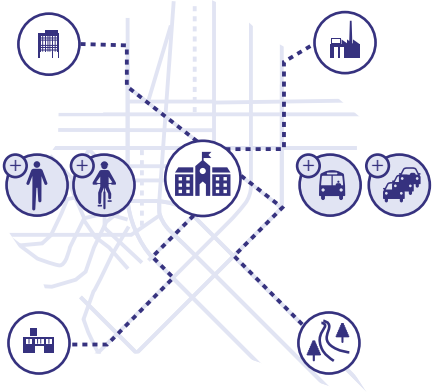
Plan for transportation services that are affordable, reliable, convenient, and comfortable and for streets that have direct, continuous, and accessible pedestrian networks, protected cycle facilities, and dedicated transit lanes. Ideally, these can be easily combined to support a variety of different daily journeys.

Analyze transit station locations, adjust and retrofit stops, or add new stops to connect them to critical services and key destinations for kids and caregivers. Make transit stations accessible by improving pedestrian crossings and making them more frequent.

Improve and connect pedestrian and cycling facilities to make intermodal connections as seamless as possible.

Change land use patterns to remove distance barriers.

Set goals to reduce $CO_2$ emissions.



## PROVIDE NEW TRANSPORTATION OPTIONS

Provide cycle-share systems and shared micromobility options, improve or add new transit services, revise transit schedules, invite electric vehicle share systems, and offer electric vehicle charging stations. These offer families more choices for traveling to their destinations.



## ADD NEW DESTINATIONS AND REDUCE TRAVEL DISTANCES

Identify sites and spaces where new destinations such as plazas, play areas, healthy food options, child- and teen-friendly businesses, educational opportunities, and healthcare facilities might be designed into street transformations, added to empty lots, or incorporated into new developments.

Incentivize projects that incorporate pause and play spaces throughout the neighborhood.

SNAPSHOT



## Child-Friendly Rotterdam

**Location:** Rotterdam, Netherlands

### OVERVIEW

Based on a series of physical interventions on streets and other public spaces such as sidewalks, back alleys, and courtyards, Rotterdam developed a code for designing outdoor play spaces in 2012. The policy recognizes that a playable and safe environment for children should not be restricted to playgrounds. The code specifies that residential streets must have sidewalks at least 3 m wide to allow for children to play safely and recommends locating them on the sunny side of the road.

SNAPSHOT



## Transit Policy

**Location:** Edmonton, Canada

### OVERVIEW

In Edmonton, children under 12 can ride for free on public transport when accompanied by a fare-paying adult or older teenager. This policy is part of a plan to make Edmonton a more family-friendly city. This special youth fare helps families save money, encourages caregivers to drop off and pick up children from school on their way to work, and incentivizes using public transit.

SNAPSHOT



## A-MA-Zone

**Location:** Seoul, South Korea

### OVERVIEW

From 1995 to 2012, the Road Traffic Act designated over 15,000 school zones across South Korea, covering nearly all elementary schools. This was the default policy and practice for school routes, but always segregated pedestrians from road traffic, and the program's commitment to safety overwhelmed the social and cultural function of streets. A-MA-Zone pilot projects were launched in 2012 as an experimental, alternative approach to conventional school zones that considered differences in local contexts. Major distinctions between A-MA-Zones and conventional school zones include shared streets; boundaries that extend beyond the legal school zone limit of a 300 m radius; speed limits reduced to 20 km/h; temporary street closures to ensure vehicle-free routes to school during peak hours; more intensive traffic-calming measures such as chicanes, pinchpoints, curb extensions, and raised pedestrian crossings and intersections; and art and play components.

## Fair Shared City

**Location:** Vienna, Austria

### OVERVIEW

In 1999, city officials in Vienna conducted a study that showed that women had a much more varied pattern of movement than men, using transit more often and making more trips by walking. To address this, city planners drafted a plan to improve pedestrian mobility and access to transit. The design would widen sidewalks; add street lighting, seating, and ramps on staircases; and improve intersections, all with the goal of providing equal resources for men and women. More than 60 urban projects designed specifically with women in mind have been implemented in Vienna.



SNAPSHOT

## Public Space Policy

**Location:** Madrid, Spain

### OVERVIEW

Based on the increasing demand to rethink public spaces, especially those used by children, the city of Madrid has developed a design guide for spaces surrounding schools. The premise of the manual is that single-use school spaces are obsolete, and that the most immediate surroundings are not safe for schoolchildren. The guide acknowledges three types of spaces and gives specific design guidance for each: the patio, located within school boundaries; the immediate surroundings, where improvements on sidewalks, crosswalks, small plazas, and school entrances can be made; and the "close surroundings," which addresses neighborhood planning, increasing proximity between services, and promoting community cohesion.



SNAPSHOT

## Pedestrian Statute

**Location:** São Paulo, Brazil

### OVERVIEW

A pedestrian-focused statute ("Estatuto do Pedestre" in Portuguese), created in São Paulo in 2017 through a partnership of the city council and civil society organizations, recognizes children, youth, and caregivers as street users and acknowledges their specific needs. It defines that pedestrians' rights include the freedom to walk with strollers or wheelchairs on sidewalks, pedestrian crossings, plazas, and other public spaces. It also defines that pedestrians must have enough time to cross the street safely, considering the time of the day, people count, and users' speeds. These considerations include children, students, older persons, people with disabilities, and people with limited mobility. Additionally, the policy requires access to educational programs targeted specifically to children, teenagers, caregivers, and older adults.




SNAPSHOT

# 7.4 | Launch Effective Programs and Initiatives

Citywide programs can help change practices and behavior by educating people or scaling up one-off projects for broader impact. Many programs focus on teaching children and caregivers to modify their behavior to deal with dangerous and uncomfortable urban environments. However, it is vital to teach children that dangerous and uncomfortable aspects of their daily journeys can and should be changed by design and policy. Programs and initiatives are mostly successful when behavior-based programs are paired with infrastructure changes. Some examples are provided below.

## Road safety programs

### VISION ZERO FOR YOUTH

Vision zero is an international program to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has been embraced by many countries around the world. In recent years, it has been expanded to explicitly prioritize kids.

### WALKING AND BIKING "BUS"

Groups of children and caregivers meet every day to walk or cycle to school or other destinations together, along a set route.

### SAFE ROUTES TO SCHOOL

Safe Routes to School is an approach that promotes walking and cycling to school through infrastructure improvements, enforcement, tools, safety education, and sometimes incentives to encourage walking and cycling to school.

### SCHOOL ZONES

School zones have low vehicular speeds, restricted vehicular traffic, and added safety measures on all streets, typically within a 200 m radius around schools.

## Cycling initiatives

### RIDE CLUBS

These clubs are composed of children, caregivers, and others who meet to expand their skills on a specific mode of transportation, such as cycling, skating, or walking. They explore different areas of the city and get to know each other.

### TRAFFIC PARKS

These are specific sites, often outdoors, where children and people of all ages can learn cycling and traffic navigation skills in a safe space that simulates real street environments. Bicycles are often provided for learning, so people can build confidence cycling before purchasing their own.

### DANISH CYCLING GAMES

Cycling games were developed by Danish pedagogues and the Danish Cyclists' Federation with the method of "learning by playing." They consist of engaging in games while riding bicycles with the purpose of teaching children and young people how to cycle, developing safety skills for cycling, and, above all, encouraging a joy of cycling.

## Public-space programs

### TREE PLANTING

Tree-planting programs can set goals for cities to incorporate trees into urban streets, ensuring they are added when streets are upgraded, through community requests or when donated by private partners. Adopt-a-tree programs can help with ongoing maintenance.

### SEATING PROGRAMS

Seating or bench programs increase the amount of public seating on urban streets, making them more comfortable. Through "streetseat" or "parklet" programs, cities provide legal permits to local private property owners or academic groups to transform vehicle parking spaces into small social spaces or pocket parks.

### PLAZA PROGRAMS

Transforming streets into plazas provides quality public spaces and new destinations within neighborhoods. Often implemented with local partners to support ongoing maintenance, these are ideal places to incorporate play spaces for children and social spaces for caregivers.

## Vision Zero for Youth

**Location:** Mexico City, Mexico

**Implementing organization(s):** City of Mexico City, Institute for Transportation & Development Policy Mexico, FIA Foundation

### OVERVIEW

Vision Zero for Youth is a program created to expand on the Vision Zero strategies developed for the city. The initiative focuses on transforming the road infrastructure around schools, raising awareness about road safety, and improving law enforcement. It also builds the capacity of city staff and decision makers to plan, implement, and evaluate the program.

In 2018, the program launched its first pilot project in the school zone around Secundaria No. 4 "Moisés Sáenz." The physical intervention was planned and implemented with the support of the school community, including students, teachers, and parents. An interim intervention that tested a new road and intersection geometry was quickly turned into a permanent street transformation. During the next phase, the city will use this experience to inform project implementation around four other schools.



SNAPSHOT

## Walk and Bike to School Days

**Location:** USA

**Implementing organization(s):** National Center for Safe Routes to School, various

### OVERVIEW

Thousands of events are organized every year to promote walking and biking to school by cities across the USA. In 2018 alone, the National Center for Safe Routes to School (the coordinating agency for Walk and Bike to School Days), registered over 3,200 Bike to School Day events, which occur every May, and 5,600 Walk to School Day events, which are held every October.

Walk to School Days started in 1997 as a one-day event. The success of the initiative led to the creation of the Bike to School Day in 2012. These events are campaigns to raise awareness about road safety and the benefits of walking and biking, but they have also triggered a broader discussion around safe routes to school. Communities across the USA have already benefited from long-term walking and cycling programs and infrastructure improvements.

There is also an online platform that helps communities plan their own event and share success stories to inspire others.




SNAPSHOT

# 7.5 | **Allocate Funding**

Sustainable funding sources are essential to creating safe streets for kids. It is also critical to consider maintenance, repairs, and operations when planning project budgets. Local governments should aim to allocate at least 33% of total spending on transportation initiatives to infrastructure for pedestrians, cyclists, and transit users.[3]

The ongoing economic health of a city is strongly influenced by its transportation investment policy and the health of its youngest populations. While cities often have multiple competing needs for limited financial resources, it is critical to ensure budget allocations prioritize streets for kids through capital investments and maintenance budgets.

Leverage private investments, development bank loans, and city taxpayer money to invest in the health and well-being of the next generation. By investing in streets for kids, cities gain indirect, long-term benefits of improved public health, environmental quality, and economic prosperity.

## Leveraging funding for streets for kids




Milan, Italy

Require and incentivize **new development projects** to provide quality infrastructure for pedestrians, cyclists, and transit users or adjacent streets. Consider adding an impact fee that is dedicated to improving neighborhood connectivity.

Establish **government-funded grant programs** to improve streets near children's facilities.

Create **urban transportation funds** that receive funding from parking fees.

Build revenue by **charging private vehicles for access to congested areas**. Reinvest in streets for kids.

Review **existing operating and maintenance budgets** to identify where safer street geometry and facilities can be implemented within existing budget.

Look at **private funding** such as crowdfunding, grants, and corporate sponsorships for interim interventions.

Partner with local **business improvement districts** to maintain projects. Create synergy between physical projects and programs. Design programs that support physical transformations and include funding for operations and maintenance.

Ensure that the budgets of **parks, landscape, and transportation agencies** have funding to maintain plaza projects.

Distribute **capital investment budgets** to equitably benefit kids over private vehicles.

Leverage **development bank funds** to improve neighborhood streets and transit access.

SNAPSHOT

## Non-Motorized Transport Policy

**Location:** Nairobi, Kenya

**Implementing organization(s):** UN Environment Share the Road Program, Nairobi City County, support from FIA Foundation

**Timeline:** 2015-present

### OVERVIEW

To improve walking and cycling, Nairobi County allocated 20% of its road construction budget for non-motorized transport infrastructure. As a result, it is now mandatory for all new road construction projects to improve conditions for pedestrians and cyclists, and that budgets include funds for ongoing maintenance.



SNAPSHOT

## Transportation Budget Policy

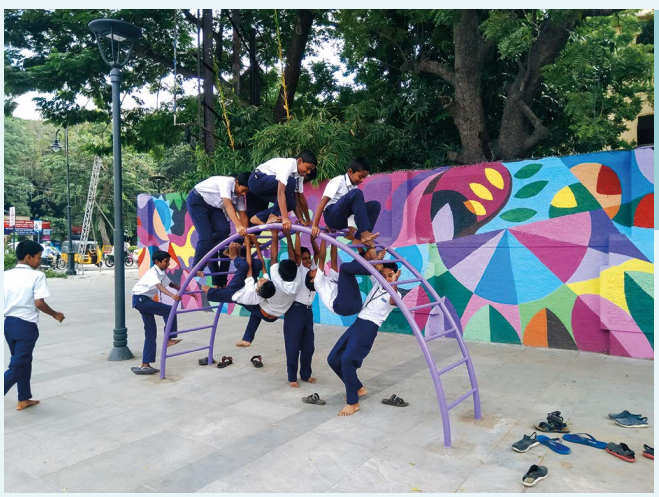
**Location:** Chennai, India

**Implementing organization(s):** Greater Chennai Corporation

**Timeline:** 2014-present

### OVERVIEW

This policy requires that at least 60% of Chennai's transportation budget be allocated to redesigning the urban transportation network and aims to make walking and cycling safer and more enjoyable. As a result, the Greater Chennai Corporation has implemented over 50 km of wide sidewalks and has an ambitious goal to build a safe and continuous pedestrian network through at least 80% of all streets.





# 7.6 | **Measure Impact**

Measuring and monitoring the impact of a project or program is important to make a case, know what works, build support, and secure funding for longer-term change. Metrics should include quantitative and qualitative evaluation, and be completed before, during, and after project implementation. Measuring physical and operational improvements can demonstrate short-term progress as well as long-term success, and the impact of multiple projects, programs, and policies can be measured at a neighborhood or citywide scale. *For more information, see Appendix D and Global Street Design Guide Chapter 3.*

| Physical and operational changes | Shift in use and activity | Resulting impacts |
|---|---|---|
| **FOR EXAMPLE:** | | |
| Length of added or improved sidewalks | Number of kids walking in safe facilities | Number of children killed or seriously injured on streets |
| Length of new protected cycle facilities | Number and percentage of kids and caregivers using cycle facilities | Percentage of kids meeting recommended daily minimum for physical activity |
| Tighter corner radii | Speed reduction for turning vehicles | Reduction in traffic crashes |
| | | Percentage of caregivers who feel safe on streets |
| Reduction in speed limit | Average vehicular speeds and percentage of vehicles speeding | Rates of kids with respiratory and chronic disease |
| Additional time for a pedestrian phase of a traffic light cycle | Percentage of kids crossing the street safely within signal phase | Percentage of kids and caregivers within 15-minute travel distance to schools, playgrounds, and public spaces |
| Area of car-free or other new public spaces | Number of kids and caregivers visiting, spending time, and playing in the space | Reduced rates of kids exposed to noise levels above the standard 55 dB |
| Number of trees planted | Number of kids interacting with nature | Reduced rates of kids and pregnant people exposed to frequent air pollution |
| New sidewalk benches installed | Number and percentage of kids and caregivers sitting | Kids and caregivers experiencing positive social interactions |

## Tips for collecting metrics

### ALWAYS COLLECT "BEFORE" DATA

This is critical: without it, there is no comparison or baseline with which to measure impact.

### CONDUCT QUALITATIVE SURVEYS

Surveys ensure individual anecdotes that might be against a project do not trump the overall success. They allow a broad group of people to provide input and can be critical in scaling up projects or making them permanent.

### MEASURE WHAT MATTERS MOST

Use resources strategically to measure the project's challenges and its objectives, such as improving road safety, adding mobility choices, reducing travel time, and providing more space to play and spend time. It is impossible to measure everything, so choose the most important metrics.

### COLLECT BEFORE AND AFTER VISUALS

Photos and videos of street transformations with kids and caregivers using them are key to communicate the challenges that exist, who is using the street, and how activities can change over time.

### COLLECT QUANTITATIVE METRICS

Collecting before and after counts of children and babies using different transportation modes or spending time in a street can inform if a project has achieved its objectives.

### MEASURE OVER TIME

To inform the success of a project over time, repeat metrics collection immediately after a project's implementation, after multiple days or weeks, and after multiple months. Identify the most relevant time of day, or day of week, to best understand the impact for kids and caregivers.

SNAPSHOT

## CurieuzeNeuzen Vlaanderen/ Citizen Science

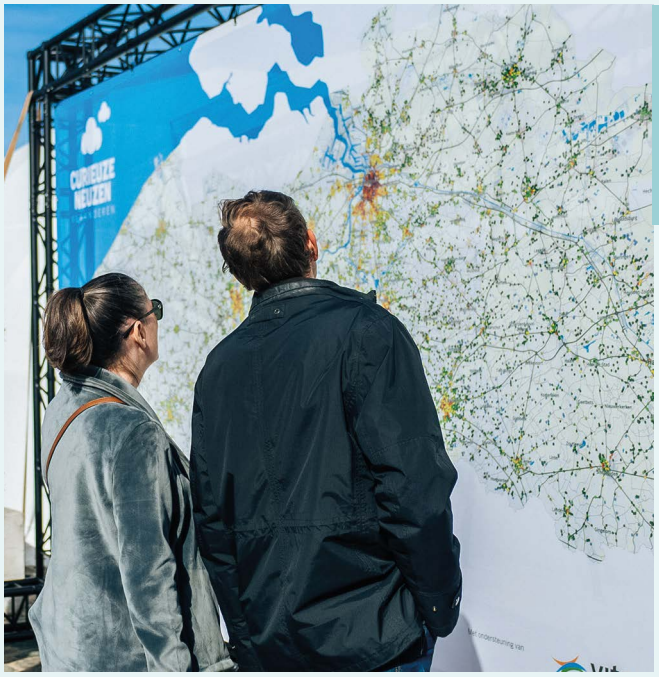
**Location:** Flanders, Belgium

**Implementing organization(s):** University of Antwerp

**Timeline:** May 2018

### OVERVIEW

CurieuzeNeuzen Vlaanderen is a citizen science project in which 20,000 citizens measured the air quality near their houses during May 2018. The aim was to acquire a detailed map of air quality in Flanders, a region of Belgium, in both cities and the countryside. Participants installed a simple, standardized measurement device on a street-facing window of their residence to measure the mean concentration of nitrogen dioxide ($NO_2$), an important indicator for traffic pollution. Air quality can vary significantly over short distances, especially due to the street canyon effect, by which pollutants accumulate in higher concentrations in narrow, poorly ventilated streets with more motor vehicles. Because of this variable air quality, many measurement locations are required to properly assess the predictive capacity of the air quality model. Help from citizens is extremely valuable to gather enough data on the spatial distribution of air quality.



SNAPSHOT

## Routes to School

**Location:** Mexico

**Implementing organization(s):** Liga Peatonal, Bernard van Leer Foundation

**Timeline:** 2017-present

### OVERVIEW

Liga Peatonal (Pedestrian League), an organization focused on safe routes to school, created an online tool that helps communities assess safety in school surroundings through an interactive map, understand changes needed in infrastructure, implement physical improvements, or implement programs and engage with local authorities. The website acts as tutorials to empower communities. It offers three different audits for assessing road safety that vary in difficulty and investment levels, and offers detailed information such as photographs and financial resources about potential projects to implement, including "Routes to School," "Walking Bus," sidewalk widening, and furniture making.

Communities can learn about project implementation processes, including official approvals needed and recommendations for designing campaigns or organizing demonstrations. Caminito de la Escuela (Routes to School) also has an online library with data, templates for official documents, and policy information

By sharing detailed but also clear information and recommendations, this guide is a powerful tool to call citizens to action.



# Resources





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# Notes

## 1 Focusing on Kids

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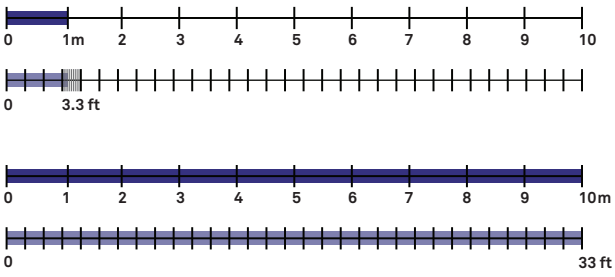
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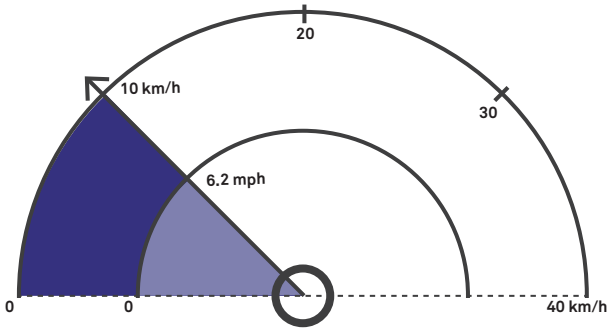
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# Appendix A | **Conversion Chart**




Distance conversion chart




Speed conversion chart

## DISTANCE

| **0.1 m = 0.33 ft** |
|---|
| 0.5 m = 1.65 ft |
| 0.6 m = 2 ft |
| 1.0 m = 3.3 ft |
| 1.2 m = 4 ft |
| 1.5 m = 5 ft |
| 1.8 m = 6 ft |
| 2.0 m = 6.6 ft |
| 2.5 m = 8.2 ft |
| 3.0 m = 10 ft |
| 3.2 m = 10.5 ft |
| 3.3 m = 10.85 ft |
| 3.5 m = 11.48 ft |
| 3.6 m = 11.8 ft |
| 4.0 m = 13.12 ft |
| 4.5 m = 14.75 ft |
| 5.0 m = 16.4 ft |
| 6.0 m = 19.5 ft |
| 10 m = 33 ft |
| 20 m = 65.6 ft |
| 30 m = 98.4 ft |
| 40 m = 132.21 ft |
| 50 m = 164 ft |
| 60 m = 196.85 ft |
| 70 m = 228.65 ft |
| 80 m = 262.5 ft |
| 90 m = 295. 3 ft |
| 100 m = 330 ft |

## SPEED

| **1 km/h = 0.62 mph** |
|---|
| 5 km/h = 3.1 mph |
| 10 km/h = 6.2 mph |
| 15 km/h = 9.3 mph |
| 20 km/h = 12.4 mph |
| 30 km/h = 18.6 mph |
| 40 km/h = 24.8 mph |
| 45 km/h = 27.9 mph |
| 50 km/h = 31 mph |
| 60 km/h = 37.2 mph |

# Appendix B | **Making a Strong Case for Children**

Putting children first in policies and projects that relate to street design is helped by strong political commitment. Planning and implementing streets for children today means taking a stand on a vision for the future and encouraging society to build consensus on important issues such as safety, health, education, social equality, and the economy. To make a strong case, use data gathered during the planning process to highlight major issues children face in the local context and to communicate the benefits expected after street projects are implemented.

## Arguments to build a strong case

### KIDS ARE DYING; LET'S SAVE CHILDREN'S LIVES

No child deserves to die from road traffic crashes. Road traffic injury is a leading cause of death for young people: every day, 500 children die and thousands more are seriously hurt. Identify and share the number of children killed or seriously injured in local road traffic crashes.

### HEALTHIER KIDS, HEALTHIER ADULTS

Investing in better streets for children means investing in their health now and in the future. Local health statistics can show how children are suffering from respiratory diseases due to air pollution from motor vehicles or from lack of physical activity. Map these where possible, or overlay with public space access, highway, and other data. Many harmful ambient conditions, including noise pollution and lack of access to nature, may be connected to mental health issues and sleeping and learning disorders.

### MORE CHILDREN—AND FEWER VEHICLES—USING STREETS

Increased use of and dependance on cars is associated with air pollution and road traffic fatalities. Reducing the number of motor vehicles on streets improves air quality while making streets safer and more playable. Using transit saves space and time. Use modal shift data from transit authorities to show how children move around the city and get to school or to assess how much time they spend inside vehicles. Fewer vehicles means more kids!

### LET CHILDREN PLAY

Many cities lack play opportunities, and they are often unable to meet the suggested time for play each day. To make a case for increasing opportunities for play, highlight the benefits of play for child development and the drawbacks to a lack of play.

### CAREGIVERS ARE ISOLATED

Postpartum depression among women may be linked with lack of access and opportunities to use public spaces and services. Health data focused on women can reveal how making streets that encourage social interactions and give safe access to key services will improve their health and well-being.[1]

### ALL CHILDREN DESERVE A FAIR AND EQUAL START

Levels of poverty are usually higher among children than in every other age range. Identify the family profile of low-income populations and argue that investing in children in these areas will lead to reduced economic and social disparities.

### MORE KIDS MEANS MORE BUSINESS

Making streets family-friendly results in more economically vibrant neighborhoods. Use child and caregiver counts on any street and compare to the number of shops, restaurants, and services and the revenues that these businesses generate.

### ENGAGED KIDS, ENGAGED CITIZENS

Exposure to the diversity of users and activities that take place on streets can enhance children's awareness of local issues, and can also offer opportunities for social interactions with each other and with adults. These experiences can strengthen a sense of belonging and citizenship. Additionally, when children are more present and visible using streets, they are more present in the consciousness of policy makers and city officials.

### KIDS NEED INDEPENDENT MOBILITY FOR PROPER DEVELOPMENT

Children are put at risk due to unsafe environments that prioritize driving, and parents are burdened by a lack of safe mobility options. To develop properly, including developing risk perception, studies show that children need an environment that facilitates their ability to be independent and take safe risks—but not an environment so unsafe that it poses a risk of injury or fatality.[2]

### KIDS MAKE PUBLIC SPACES SAFER

The presence of children and caregivers, especially women, signals to others that a public space is safe. Unsupervised kids increase the perception of safety and trust in the community. Globally, children are allowed to run errands on their own at different ages; however, in countries that have a strong culture of walking, cycling, and taking transit, kids roam self-sufficiently at an earlier age. Use crime statistics to advocate for national policies that promote active mobility and request that local authorities set lower speed limits.[3]

## Peatónito

**Location:** Mexico City, Mexico

### OVERVIEW

Peatónito is a masked "luchador" (wrestler) and a superhero activist for pedestrian rights and safety, aiming to build a city for people rather than private vehicles. Peatónito promotes these goals through public displays such as pushing vehicles backward that invade pedestrian crossings, painting zebra crossings at dangerous intersections, walking on top of vehicles parking on sidewalks, helping vulnerable people cross the street, and reporting pedestrian obstacles to authorities.

Besides working out in the city, Peanónito also has a desk job: he is an expert on walkability, and works as an advisor to governments around Mexico. He participates in tactical urbanism interventions that he calls "walking urban guerrillas."

Peatónito has worked with children around the world. In Mexico, he has helped the organization Camina redesign intersections near schools and has engaged with Peatoniños, the official play street program of Mexico City.





## Zebras Urban Educators

**Location:** La Paz, Bolivia

**Timeline:** 2001-present

### OVERVIEW

Street safety can be communicated in a fun way. Cebras Educadores Urbanos (Zebras Urban Educators) is a city-funded program that aims to reduce road safety injuries and infractions committed by motorists. Participants dressed in zebra costumes remind motorists about the existence of pedestrian crossings and traffic signals, and help pedestrians safely cross the street.

Besides raising awareness and increasing safety, the program invests in the local community. Youth from low-income and troubled communities are trained and given opportunities to participate in the program in exchange for support services and a monthly stipend. By providing education and, for many, a first employment opportunity, many participants are able to find new jobs and pursue higher education. The program started with 24 participants and, currently, 225 "zebras" encourage pedestrian safety across La Paz. Since its creation in 2001, Zebras Urban Educators has engaged over 6,000 adolescents. It has been replicated in other Bolivian cities, such as Sucre and El Alto.



# Appendix C | **Include Children in All Policies and Plans**

Opportunities for policies and plans to require, permit, prohibit, incentivize, guide, or update current practices to prioritize kids should be identified at the local, regional, or national level. They can help to align big-picture and long-term agendas while also supporting the smaller details that impact the implementation quality in everyday projects. These policies and plans should be revisited every few years to test their relevance and effectiveness, and should be supported by allocated budgets where appropriate. The following list provides some examples to inspire change in policies and plans.

| Level | Type of policy | Ideas for what to look for, change, or add |
|---|---|---|
| **Local** | Vision plans and city masterplans | • Include the health and well-being of children in overall visions and create specific goals that enhance their safety in streets.<br>• Allow and incentivize a mix of uses and higher densities, creating walkable and bikeable neighborhoods.<br>• Mandate proximity between housing, public spaces, and services such as schools and health centers.<br>• Create family zones and low-speed zones.<br>• Define forms of engagement for children and caregivers in planning processes.<br>• Align multiple sectoral plans that address street infrastructure, urban planning, transportation, open space and green areas, education, and health.<br>• Set clear and measurable milestones to work toward long-term goals, clarify who is responsible for what action, and allocate budgets accordingly. |
| | Mobility plans | • Recognize children, young people, and caregivers as users of mobility services and spaces, and elevate their specific needs. Set up count programs disaggregated by gender, caregiver status, and more to collect specific data.<br>• Prioritize walking, cycling, and transit over private vehicles.<br>• Acknowledge multimodal transportation and the need to build infrastructure that allows for multiple mode choices.<br>• Collect data, make it available across agencies, and define mechanisms to implement and monitor this database. *For more information, see Managing Mobility Data*.<br>• Require schools to develop "travel plans" and create mechanisms to monitor them and implement upgrades needed to improve journeys to and from school.<br>• Define programs to ensure safe routes to school and identify city agencies to implement them.<br>• Define "school streets" as temporary or permanent street closures in front of schools and other institutional programs and require transit agencies to implement them.<br>• Develop local parking policies: remove parking minimums and provide parking maximums for local developments, and establish demand-based pricing for on-street parking spaces.<br>• Set speed limits on all streets to maximize safety for all road users.<br>• Designate pedestrian-only areas or districts.<br>• Plan for shared micromobility by providing a network of safe, protected spaces to ride, scoot, and more.<br>• Define where shared micromobility devices should be used. Just as many cities have found that protected cycle lanes offer safe places to ride, restricting scooters and similar devices from sidewalks can minimize conflicts with pedestrians.<br>• Allocate funding sources for projects and programs that prioritize children's and caregivers' mobility. |
| | Active mobility and non-motorized transportation (NMT) plans | • Prioritize walking and biking.<br>• Set specific vision and goals for planning and implementing active mobility.<br>• Define walking and cycling networks and priority areas for improvements.<br>• Relate to existing or new codes and guides that regulate implementing and building infrastructure. |

| Level | Type of policy | Ideas for what to look for, change, or add |
|---|---|---|
| **Local** | Neighborhood plans | • Include the health and well-being of children in overall vision and create specific goals that enhance their safety in streets.<br>• Incentivize a mix of uses and higher densities near transit.<br>• Restrict on-street and off-street parking to free up street space for other users.<br>• Mandate proximity between housing, public spaces, and services such as playgrounds, schools, health centers to create 15-minute neighborhoods.<br>• Create mobility networks that recognize children's and caregivers' needs and encourage walking, cycling, and taking transit. |
| | Vision Zero, Safe Routes to School, and road safety plans | • Set vision and goals that prioritize children's safety and elevate children as a priority population.<br>• Define sets of initiatives, including policies, programs, and projects that enhance children's and caregivers' safety on streets.<br>• Define spaces and tools for engaging children and caregivers while developing and implementing plans.<br>• Set speed limits on all streets to maximize safety for all road users.<br>• Define campaigns that will encourage behavior change from motorists. Use local road safety data to communicate urgency and importance.<br>• Align multiple sectoral plans that address safety.<br>• Establish an interagency task force to oversee and hold agencies accountable. |
| | Sustainability plans | • Recognize and elevate the benefits of walking, cycling, and taking transit for climate change and other environmental issues.<br>• Prioritize sustainable transportation infrastructure through road space allocation and investments.<br>• Identify comprehensive local transit and cycle networks with community input, and develop a phasing plan and budget for implementation. |
| | School mobility plans | • Collect data and analyze school community travel patterns.<br>• Define mode-shift goals to increase the share of active mobility users.<br>• Create communication strategies to share the benefits of active travel with school communities.<br>• Create educational initiatives to promote active travel. |
| | Zoning codes | • Restrict, mandate, allow, or incentivize certain land uses and densities, promoting proximity between residences and services and encouraging active modes of transportation.<br>• Allow ground-floor uses on commercial or mixed-use streets to encourage natural surveillance and vibrant street environments.<br>• Define curb cut regulations, parking minimums and maximums, building entrance frequency, and ground-floor transparency, which can directly influence pedestrian experience.<br>• Incentivize or mandate cycle and stroller parking. |

| Level | Type of policy | Ideas for what to look for, change, or add |
|---|---|---|
| **Local** | Transit agency policies and codes | • Plan for convenient and equitable transit routes and stop locations that serve children and caregivers, including all-day service.<br>• Set fair, affordable, or free fares for kids and caregivers.<br>• Review transit fare policy and eliminate practices, such as paid transfers, that make it more difficult or expensive for children and caregivers to use transit. Eliminate transit fares for children and consider free or discounted fare programs for other users based on need.<br>• Set maximum travel speeds, especially around schools and other facilities frequently used by children and caregivers.<br>• Define methods for placing frequent pedestrian crossings and traffic signals within transit networks.<br>• Provide minimum standards and guidance for accessible transit stop design and placement, as well as accessible transit vehicle design. Consider wider stop clearances and vehicle boarding doors to accommodate strollers, prams, and carts. Provide comfortable seating, shade and weather protection, and adequate lighting along transit routes.<br>• Note that in many cases, public transit might be regulated at the regional or national level. |
| | Street design guidelines, codes, and manuals | • Define street geometry: define minimum sidewalk and clear path widths considering the needs of children and caregivers, provide guidance and minimum standards for pedestrian crossings, set minimum dimensions for cycle facilities, define maximum travel-lane widths, and set minimum and maximum radii for intersections.<br>• Define local materials allowed, required, or recommended for surfaces and facilities. Provide specifications as appropriate.<br>• Set local standards for spacing and levels of street lighting.<br>• Define minimum street tree and landscaping requirements.<br>• Outline possibilities and requirements for free-standing elements and furniture on streets and plazas, considering specifications such as material and placement and minimum dimensions and spacing.<br>• Allow and incentivize parklets and on-street parking spaces for stroller or cycle parking. |
| | Public spaces, plazas, and planting and landscaping design guides | • Define materials suitable for the local context and for ensuring children's and caregivers' accessibility and comfort.<br>• Guide planting and furniture installation, considering the local climate, to create a child-friendly environment.<br>• Require minimum planting and seating installation.<br>• Define "pause zones" and give guidance for facilities and amenities that benefit kids and caregivers. |
| | Pedestrian statutes | • Acknowledge pedestrian rights.<br>• Recognize children, youth, and caregivers as pedestrians with specific needs.<br>• Eliminate all laws that criminalize walking and cycling, such as helmet and jaywalking laws. |
| | Other local ordinances | • Regulate and allocate funding for specific programs and projects, such as "open streets."<br>• Focus on early childhood development by providing access to high-quality destinations such as daycares, schools, wellness clinics, and childcare centers.<br>• Require public spaces that provide opportunities for play and interaction with nature for caregivers, infants, toddlers, and older kids. |

| Level | Type of policy | Ideas for what to look for, change, or add |
|---|---|---|
| **Regional and national** | Children's, family, and women's measures | • Secure children's and caregivers' rights to move safely and independently.<br>• Ensure children's right to play and to participate in public projects and decision making.<br>• Ensure children's right to access services and city spaces.<br>• Prohibit discrimination, especially of children, young people, and women. |
| | Speed limits | • Allow cities to set speed limits to maximize safety for all road users on all roads, including state and federal roads that pass through local jurisdictions. |
| | Mobility and transit policies and codes | • Acknowledge children, young people, and caregivers as users of mobility services and spaces, and recognize their specific needs. Collect data on street and transit users disaggregated by gender, caregiver status, and more.<br>• Prioritize walking, cycling, and transit use over private vehicles when defining policies and infrastructure requirements.<br>• Define street typologies and set maximum speed limits.<br>• Ensure that nationally and regionally designated roads running through urban areas are not designed using highway codes, but instead adopt urban street geometries and speeds.<br>• Require mechanisms for engaging children and families when developing local mobility plans.<br>• Create financial mechanisms to fund local projects that prioritize the safety of children and caregivers using streets.<br>• Define national visions and goals to prioritize safety, accessibility, and the well-being of children and caregivers when using streets and mobility services.<br>• Require state and municipal authorities to align local agendas.<br>• Define low-speed zones, such as school zones, and require local governments to implement those.<br>• Define "school streets" as temporary or permanent street closures in front of schools and other institutional programs, and require local governments to implement them. |

# Appendix D | **Examples of Metrics**

Collecting and analyzing project metrics allows practitioners to effectively measure the impact of their projects over time; assists with communicating success to the broader public; builds evidence; and supports with refining and updating local practices, policies, and processes. Each metric should be carefully selected based on resources, available time, and project intent. Not every metric will be relevant to every project or context. *For more information, see Chapter 7.6 and Global Street Design Guide Appendix B.*

## Physical and operational changes

| Category | Metric |
|---|---|
| Pedestrian facilities | • Percentage of network with or total length of paved sidewalks<br>• Percentage of network with or total length of universally accessible sidewalks<br>• Percentage of network with or total length of sidewalks with least 1.8-m-wide clear path<br>• Percentage of continuous sidewalks<br>• Percentage of streets with street lighting<br>• Percentage of streets with shade<br>• Percentage of streets with trees and landscaping<br>• Number of intersections with safe pedestrian crossings at all legs<br>• Distance between multiple pedestrian crossings<br>• Pedestrian crossing distance/length<br>• Percentage of raised pedestrian crossings and crossings with pedestrian ramps<br>• Percentage of signals with adequate pedestrian crossing phase<br>• Increase in permeability and pedestrian routes options<br>• Percentage of streets with pause and play spaces<br>• Number of play and learning elements added<br>• Number of seating elements added<br>• Area or length of pedestrian-only areas or plazas |
| Cycle facilities | • Percentage of network with or total length of protected cycle facilities<br>• Percentage of network with or total length of recreational cycle lanes<br>• Percentage of network with or total length of cycle streets<br>• Percentage of network with or total length of cycle facilities that are at least 2.4 m wide<br>• Total length of safe, connected cycle network<br>• Number of protected intersections for cyclists<br>• Number of dedicated cycle signals<br>• Number and density of cycle parking spaces<br>• Number of cycle-repair stations, footrests and grab bars, wayfinding signs, and other amenities<br>• Presence of cycle-share systems that cater to children and caregivers<br>• Distance between cycle share stations<br>• Percentage of shared bicycles with child seats<br>• Presence of local traffic parks for learning to cycle |
| Transit facilities | • Percentage of network with or total length of dedicated transit lanes<br>• Percentage of transit stops with accessible boarding<br>• Percentage of transit stops in areas with active frontages, public nighttime use, and adequate lighting<br>• Percentage of transit stops with basic amenities for comfort and convenience, such as public toilets and drinking fountains<br>• Percentage of transit stops with schedules, real-time information, and wayfinding<br>• Percentage of transit fleet using clean energy mode<br>• Existence of reduced transit fares<br>• Percentage of transit fleet with dedicated space on board for wheelchairs, strollers, and priority seating |

| Category | Metric |
|---|---|
| Trees and landscaping | • Number of trees planted<br>• Area of green infrastructure<br>• Area of permeable paving |
| Land use | • Percentage of daycares, schools, grocery stores, and healthcare facilities located within a 15-minute walking distance of each other<br>• Percentage of blocks with visually active frontages, including parks, squares, and green spaces<br>• Percentage of vacant lots transformed into public spaces |
| Noise and air pollution | • Presence of no-idling and no-honking zones<br>• Presence of low-emission zones<br>• Presence of vehicle-free districts or limited access zones |
| Speed and road safety | • Percentage of neighborhood areas characterized as low-speed zones<br>• Percentage of streets with maximum speed limits of 30 km/h<br>• Percentage of travel lanes on urban streets that are 3 m wide or less<br>• Percentage of intersections with tightened corner radii |

## Shifts in use and activity

| Category | Metric |
|---|---|
| Pedestrians | • Percentage of women, pregnant people, people with disabilities, infants, toddlers, and youth as pedestrians<br>• Percentage of children using streets independently<br>• Percentage of children who walk to school<br>• Percentage of children and caregivers using street furniture<br>• Percentage of children served by streets with trees and landscaping<br>• Percentage of children playing on sidewalks (alone or together, structured or unstructured)<br>• Percentage of caregivers engaged in conversations with children or other people<br>• Percentage of people perceiving streets as clean |
| Cyclists | • Percentage of population served by cycling infrastructure<br>• Percentage of women and children among all cyclists<br>• Percentage of kids cycling to school<br>• Percentage of kids who feel comfortable cycling by age 10 to 12 |
| Transit users | • Quality of service (frequent and on time)<br>• Average travel time across the city<br>• Percentage of population served by the transit system<br>• Percentage of caregivers who wait for more than 10 minutes at transit stops and terminals<br>• Percentage of income spent on transit<br>• Percentage of transit fleet using clean modes of power generation |
| Speed and road safety | • Average vehicular speeds<br>• Percentage of all motorists that comply with speed limits<br>• Percentage of all motorists that comply with yielding rules<br>• Number of children that are driven to school |

## Resulting impacts

| Category | Metric |
|---|---|
| Air quality | • Daily concentrations of $PM_{2.5}$, $PM_{10}$, $NO_2$, and other air pollutants<br>• Percentage of kids and pregnant people frequently exposed to ambient air pollution<br>• Percentage of kids with respiratory and chronic diseases<br>• Percentage of low-emission vehicles |
| Road safety | • Fatality rates in traffic-related occurrences [killed or seriously injured (KSI) per 100,000 people]<br>• Number of kids killed or seriously injured on streets<br>• Percentage of vehicles speeding |
| Noise pollution | • Percentage of kids exposed to noise levels above the standard 55 dB<br>• Reduced noise levels from vehicles, including trucks |
| Health and chronic disease | • Percentage of kids meeting recommended daily minimum for physical activity<br>• Percentage of kids suffering from chronic diseases<br>• Percentage of kids and caregivers experiencing positive social interactions |
| Personal safety | • Percentage of caregivers who feel safe on the streets<br>• Crime rates per 100,000 people |
| Environmental impacts | • Percentage of kids and caregivers with daily exposure to nature<br>• Biodiversity |
| Access to services | • Percentage of kids and caregivers within a 15-minute travel distance to critical services<br>• Percentage of kids that live within a 15-minute walk to school<br>• Percentage of kids that live within a 10-minute cycle ride to school<br>• Percentage of kids that live within a 15-minute walk to a playground<br>• Percentage of kids that live within a 10-minute cycle ride to a playground |
| Governance | • Percentage of women in decision-making positions in charge of urban and mobility policies<br>• Percentage of city budgets allocated for initiatives to upgrade the built environment in support of children and families<br>• Presence of child-advocate positions in city and regional government |
| Programs | • Number and frequency of outdoor events such as open streets, play streets, and school streets<br>• Number of children and caregivers served by programs |
| Participation | • Number of community members, children, and caregivers participating in public meetings, hearings, and outreach<br>• Percentage of users satisfied with pedestrian, cycling, and transit infrastructure<br>• Percentage of users that feel safe and comfortable |

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"For too long, cities have ignored children's needs and wishes and allowed the car to reign supreme. The climate crisis, an epidemic of inactivity, and environmental degradation all add to the case for change. *Designing Streets for Kids* is a timely, comprehensive guide to creating safe, sociable streets and neighborhoods, making cities more sustainable and livable for everyone."

—**TIM GILL**, author of *No Fear* and international expert on childhood development

"If you design a street that works for kids, you design a street that works for everyone. *Designing Streets for Kids* shows how cities can lead by design to improve the quality of life for people everywhere."

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"Urban design is the most important thing we can do to make streets safer for everyone. Using the design principles in *Designing Streets for Kids*, we can start today by building streets from a child's perspective."

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"Safe streets are essential so that everyone in cities can have access to the same opportunities and the same quality of life. *Designing Streets for Kids* helps give our youngest residents and their caregivers the option to get around as safely and easily on foot, bus, or bike as anyone in a car."

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"Streets designed for the safety of children aren't just safer, they are the foundation of a city with less driving, less traffic, and less pollution. This guide lays the groundwork for all street users to have healthier, happier lives."

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